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CONSTRUCTION AND EQUIPMENT

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CONSTRUCTION

OFFICIALS REVIEW PROGRESS IN RURAL CONSTRUCTION

First Deputy Gosstroy Chairman

Moscow SEL'SKOYE STROITEL'STVO in Russian No 5, 1980 pp 1-3

[Article by G. Fomin, first deputy chairman of USSR Gosstroy and chairman of Gosgrazhdanstroy: "Reconstruction of Rural Areas -- A Most Important State Task"]

[Text] The reconstruction of villages and towns throughout the country into well organized kolkhoz and sovkhoz settlements, where the conditions for work, daily routine, relaxation and comprehensive intellectual and physical development of the personality are relatively similar to those for municipal settlements, is considered to be a most important socio-economic task arising from the requirements set forth in the CPSU Program.

And a great deal has been accomplished in this regard.

During the past 10 years the rural population of our country has been provided with approximately 330 million square meters of dwelling space, of which amount 257 million square meters have been of the farmstead type. The average amount of dwelling space per individual in the rural areas has been raised from 9 square meters in 1969 to 13 square meters.

During this period the following facilities were placed in operation: childrens' pre-school institutes for 1.6 million children, general educational schools for 8.8 million students and club facilities for 4.5 million members. Compared to 1970, the volume of consumer services made available to the population increased by a factor of 2.5 during 1978.

Large-scale capital investments are being channelled into the agricultural sphere for the purpose of solving the strategic tasks of the party's agrarian policies and a far-flung network of state and interkolkhoz planning and construction organizations has been created. Their production base is being developed. Draft building plans for various regions of the country and also a series of standard plans for rural dwellings and public buildings have been developed for the central settlements of kolkhozes and sovkhozes.

During the past few years the architectural-construction level for building systems has been raised in many republics, kraya and oblasts, improvements have been realized in the quality of civic improvements and in the landscaping of settlements, more extensive use has been made of progressive planning and building methods and of the new standard plans for dwellings and public buildings and rural settlements have been created which can serve as standards for a complex building plan and civic improvements. For the best of these, prizes were awarded by the USSR Council of Ministers and the councils of ministers of the union republics and, as well, diplomas and medals were issued by the VDNKh [Exhibition of Achievements of the National Economy of the USSR].

Their number includes Verkhnyaya Troitsa in Kalininskaya Oblast, Nurma -- Leningrad Oblast, Mayskiy -- Permskaya Oblast, Klimovskoye -- Vologodskaya Oblast, Komsomolets -- Kuybyshevskaya Oblast, Dubrovka -- Chelyabinskaya Oblast, Luzino -- Omskaya Oblast, Novoberezinskoye and Yubileynoye -- Krasnodarskiy Kray, Yutsu -- Stavropol'skiy Kray and Podasosnoye -- Altayskiy Kray.

Model settlements were also built in the Ukraine, Belorussia, Estonia, Latvia, Lithuania and in other union republics.

Tremendous volumes of rural production and residential housing construction work are being carried out in our country. In essence, a new material and space medium, one which surrounds the rural inhabitants, is being created. The task of the planners and builders consists of making this medium comfortable, pretty and technically perfect and responsive to the high requirements of agricultural workers and to the conditions and opportunities prevailing during the period of developed socialism.

In planning a new village, we must rely upon the traditions which made the old settlement attractive. This includes its national and regional originality, its skilful and tactical placement in the natural environment and the taking into account of those working and living conditions which are associated with work carried out in a large-scale agricultural production effort by a rural resident and growth in his cultural and domestic requirements.

In creating a unique and memorable individual aspect for the rural areas and in organizing a system of comprehensive public services for a village, great importance is attached to the formation of its center.

The building plans for a number of settlements serve as fine examples: the Moscow settlement for the Druzhba construction cooperative of the Nara Sovkhoz, the Belorussian settlements of Myshkovichi, Sorochi, Malech, Kopti and Novopoleskoye, the Latvian settlements of Nakotiye and Yumprava and the Estonian settlement of Khaabname. Diverse types of dwellings are employed in these plans and this has brought about extensive and planned developments by the planners in this direction and the use of national

architecture traditions, in combination with industrial methods for housing construction. Single and two-story farmstead type dwellings have been employed most extensively. In the Soviet Baltic republics, the construction of single-apartment individual dwellings has been very popular.

However, serious areas of neglect and certain shortcomings, as mentioned during the July (1978) Plenum of the CPSU Central Committee in the speech delivered by Comrade L.I. Brezhnev, have still not been eliminated in rural construction and planning.

The tempo for transforming villages and the achieved level of rural construction are still not in keeping with the tasks for accelerated economic and social development of the Soviet countryside. The construction of production facilities is not always being carried out simultaneously with dwellings and projects of a cultural-domestic nature. Engineering equipment and civic improvements are lagging behind. The dispersion of capital and material resources among many small projects is continuing. Housing construction being carried out with funds obtained from the population and with the aid of state credit is not being supplied with the required construction materials and products.

The plans for residential housing construction are not always being carried out. The placing in operation of consumer services projects and trade enterprises is lagging behind. The construction organizations are only weakly introducing into operations new standard plans for rural dwellings and public buildings.

Serious shortcomings exist in the draft plans and building systems for rural settlements, developed by certain planning organizations in the Russian Federation, Kazakhstan, Azerbaijan and Moldavia. The structure and number of floors in the dwellings are not always sound; in a number of instances, use was made of sectional multi-apartment and, at times, multi-story buildings, with no solution having been obtained for the problem of private plot management.

The architectural-planning solutions for a number of settlements in the Kazakh SSR, Turkmen SSR, Tadzhik SSR, Kirgiz SSR, some oblasts in the RSFSR, Uzbek SSR and the Ukrainian SSR are formal in nature. Routine use is being made of a limited number of architectural-planning methods, with no consideration being given to the specific construction conditions. During the preparation of draft-planning documentation, very little attention is being given to utilizing the landscape or national architectural traditions.

The standard plans for rural dwellings and public buildings, when developed into industrial structures, still do not always ensure their expressiveness and attractiveness, they do not reflect the national-domestic features and traditions of national architecture in the regions of construction and they require improvements in the technical-economic indicators. There are still

only a few good standard plans for individual and cooperative construction and also for economic buildings.

Further improvements are required in the architectural-planning and design solutions for the plans for public buildings, taking into account the progressive forms for providing services for the rural population, the extensive use of new and local construction materials for finishing off facades and interiors, cooperation and interlocking of enterprises and institutes and the creation of ensembles for the centers of rural settlements.

The July (1978) Plenum of the CPSU Central Committee, which defined the party's task with regard to the further development and intensification of agricultural production, attached special importance to rural construction for solving social problems in the rural areas and it confirmed the steadfast course being pursued by the party in the interest of radically improving housing and standard of living for the rural population and eliminating the shortcomings in this work.

In the area of rural resettlement, the chief task is that of overcoming the disparity between large-scale mechanized socialist agricultural production and historically established small estate resettlement of rural inhabitants.

The party has outlined a clear course for solving this task -- transforming towns and villages into well organized sovkhoz and kolkhoz settlements, the gradual resettlement in them of the populations of farmsteads and small villages which have lost their productive importance and also the concentration of capital investments for the creation in these settlements -- centers of production activity for the farms -- of modern dwellings and public and production buildings. This is a prolonged process. At the same time, one must not overlook the inhabitants or small villages which will continue to exist, or the comprehensive cultural-domestic, trade, transport and other types of services for their populations.

In connection with the reconstruction of villages, great importance is attached to the high quality preparation of draft-planning and technical documentation.

A starting point is the completion during the next few years of the conversion over from the former agricultural rayon planning to complex planning. Its importance increases in connection with production specialization and concentration and a strengthening of interenterprise and inter-rayon contacts. The work must be based upon the results of scientific studies of trends in socio-economic development and in demographic processes, on a broad range of problems associated with transformation of the rural areas and upon scientifically sound studies on the prospects for agricultural production in various regions of the country. Only if such a complex approach is employed will it be possible to solve those problems concerned with the formation of resettlement systems and their bases, together with the placement of the productive forces.

It was decided during the plenum that rural families must, as a rule, be provided with separate well organized dwellings. Thus each village should be built taking into account the specific features of the populated point itself and also the requirements of individual groups of its residents, based upon the nature of their production specialization.

At the present time, the CPSU Central Committee and the USSR Council of Ministers have expanded considerably the privileges available to individual builders and to the rural housing-construction cooperatives.

In this regard, USSR Gosstroy introduced changes and supplements into the construction norms and rules. It was established that when building rural populated points provision should be made for the preferred use of single-story one and two-apartment dwellings of the farmstead type and of multi-apartment one and two-story interlocked dwellings having exits for each apartment leading to the private plots.

Depending upon the requirements of the various categories of rural residents and the local conditions, it is permissible to use sectional dwellings three and four stories in height, with the necessary farm buildings required for operating a private subsidiary farm.

Changes and supplements were introduced into the construction norms and rules for the planning of dwellings, for individual builders, and for farm buildings in the rural areas, which call for an increase in the upper limits for overall apartment space of 21 percent.

A considerable number of standard plans for state, cooperative and individual construction, in all regions of the country, have been produced by the central, republic and local planning organizations. In 1979 and 1980, as a supplement to those already available, 220 additional plans for houses, for use by individual builders, are being developed.

More than 30 million square meters of living space are being erected in the rural areas of our country each year.

In recent years the USSR Ministry of Rural Construction, the USSR Ministry of the Timber and Wood Processing Industry and also inter-kolkhoz construction organizations have been erecting rural construction combines at an intensive rate. This will serve to raise the capability of the production base for rural large-panel housing construction, by the end of 1980, to 5.6 million square meters of housing space.

A new and important step in this direction is the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "Further Development of Plant Production of Wooden Panel Houses and Sets of Wooden Parts for Houses With Walls Made From Local Materials for Rural Housing Construction."

Within a brief historical period, a powerful base must be created throughout the country for industrial housing construction, a base which will ensure

the conversion over from wooden plant housing construction to a modern technical base, a substantial acceleration in the transformation of towns and villages of our homeland into well organized kolkhos and sovkhoz settlements, a solution for the task of raising the material and cultural standard of living for rural workers and the formation of stable and highly skilled cadres of agricultural production personnel.

The resolution calls for the production volumes for panel housing and for sets of wooden parts for houses having walls made from local materials to be raised to 23.2 million square meters by 1990.

In this regard, important tasks have been assigned to the organizations of Gosgrazhdanstroy and the gosstroy organizations of the union republics and to the local soviets of people's deputies and their architectural-planning organs.

During 1980, the best plans must be selected from among those developed in conformity with the new norms for planning rural housing and new standard plans must also be developed for the different natural-climatic zones found in the country, plans which will make it possible to organize the production of houses at existing or modernized housing construction enterprises or at those presently under construction.

Taking into account the requirements of plant production, solutions must be found for those tasks associated with raising the architectural, technical and operational qualities of dwellings, such as standardization of the planning parameters and construction parts, which will make it possible to organize the production of a broad range of houses with a limited number of elements, and the development of variants for space-planning solutions which will ensure variety and individualization in the architecture for dwellings, depending upon the construction regions, local conditions and the traditions of national architecture, and also variants for the design solutions for houses having walls made from local materials, which call for the use of various types of materials for the exterior and interior walls, partitions, ceilings and roofs.

In houses having walls made from local materials and in addition to brick and natural stone, use must be made of structures made from water-resistant gypsum, gas-silicate, light weight aggregate perlite concrete, slag cement stone and so forth. Houses erected in conformity with the above-mentioned decree should be equipped with central or apartment heating, kitchen ranges and water heaters which operate on the basis of solid, gas or liquid fuel or electric ranges and water heaters, depending upon local conditions, centralized or local water supply and sewerage systems.

Scientific studies and the development of planning norms and standard plans for rural houses, which conform fully with the modern technical, aesthetic and technical requirements, must be carried out in close mutual coordination with these problems.

As quickly as possible, tracts of land must be set aside for use in the expansion of old and the erection of new enterprises, they should be connected up to existing engineering networks and transport mainlines for the purpose of reducing construction expenditures and assistance should be furnished for the planning and construction of enterprises and housing for workers and engineering-technical personnel.

Special attention should be given to expanding the nomenclature for the development of capabilities and to raising the quality of local construction materials to be used for rural housing construction.

The transformation of towns and villages into well organized settlements, improvements in their production and socio-cultural potential, the development of an industrial base for housing construction, an increase in the tempo of plant production operations, improvements in the functional, technical and aesthetic qualities of dwellings and public buildings for rural inhabitants and improvements in the system of rural resettlement and in the planning and building of rural settlements -- all of these factors constitute an important sector of communist construction.

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Deputy RSFSR Agriculture Minister

Moscow SEL'SKOYE STROITEL'STVO in Russian No 5, 1980 pp 3-5

[Article by O. Poteryakhin, deputy minister of Agriculture for RSFSR: "Improvements in Organization of Construction in Rural Areas"]

[Text] The successful implementation of the great program for further improving agriculture is directly related to the organization of capital construction. These words, uttered by Comrade L.I. Brezhnev during the July (1978) Plenum of the CPSU Central Committee, do not merely furnish the key to understanding the importance of this particular sector of work. In addition, they express in a concentrated manner the varied tasks confronting the army of almost 3 million worker-builders engaged in erecting rural projects, the specialists attached to construction ministries and departments, clients and planners and the producers and suppliers of equipment. The successful fulfillment of the plans for the economic and social development of our society, as outlined during the 25th CPSU Congress, is dependent to a considerable degree upon improvements being realized in capital construction in the rural areas.

A great deal has been accomplished in this regard.

During the past 4 years of the Tenth Five-Year Plan, the kolkhozes and sovkhoses in the Russian Federation employed 50.4 billion rubles worth of capital investments against a plan calling for the use of 47.6 billion rubles worth, or 2.8 billion more rubles than the established volumes. The plan for construction-installation work during this period was over-fulfilled by 1.8 billion rubles. Considerable increases were noted in the

volumes of capital investments employed for developing agriculture in the kolkhoznicheskiy sector. This made it possible to strengthen to a considerable degree the logistical base for agriculture. Last year, 4.8 billion rubles worth of capital investments were employed here, or 800 million more rubles worth than in 1976. The plan was over-fulfilled owing to the fact that the economic method of construction was employed.

The builders of RSPSR Minsel'stroi (Ministry of Rural Construction) and the kolkhoznostroy Association are under a great obligation to the agricultural workers. During 4 years of the five-year plan, they fulfilled the plan for construction-installation work by only 85 percent, or they failed to use 3.3 billion rubles during this period, which is almost equivalent to their annual construction plan. As a result of unsatisfactory work on the part of contractual construction organizations at rural projects and a low level of organization for labor and production, during the past year alone more than 400 large-scale animal husbandry complexes, poultry factories, hothouse combines and other agricultural enterprises were not placed in operation.

In some oblasts, krais and autonomous republics the capital investments being allocated for non-production construction work are not being employed from year to year and the planned tasks for placing these projects in operation are not being fulfilled. During the years of the current five-year plan, the following facilities were not placed in operation at kolkhozes or sovkhozes: approximately 1 million square meters of living space, schools for 95,000 students, kindergartens and nurseries for 100,000 children and clubs and palaces of culture for 235,000 individuals. In particular, the construction of water line, sewerage, gas and heating networks and other installations of the municipal economy is lagging behind.

This underscores the fact that proper attention is not being given in all areas to the construction of projects of a non-production nature and that the contractual organizations have still not changed their attitude towards this type of construction. For example, prior to 1960 the organizations of RSPSR Minsel'stroi had commenced work on schools at sovkhozes for 115,000 students, with the norms for the duration of this construction not exceeding 6-8 months. Actually, these installations were erected over a period of 3-4 years. Of this amount of carry-over construction work for schools, RSPSR Minsel'stroi accepted schools for only 61,400 students in its plan for placing installations in operation during this current year. The plans also called for 75 percent of the carry-over projects for childrens' pre-school institutes and 64 percent of the clubs to be placed in operation.

In order to ensure fulfillment of the established plans for turning over projects of a non-production nature and housing, the construction organizations must consider construction to be their primary task and they must prepare production schedules for such work: childrens' pre-school institutes and schools must be placed in operation prior to the beginning of the academic year. Those charged with carrying out the work must display a greater degree of responsibility for the high quality and timely placing in operation of these projects.

In addition to the priority construction of projects of a social and cultural nature, as well as educational, public health, food production and food storage facilities, a task has been established and is being carried out successfully in a number of areas in connection with erecting no less than 10 apartments per farm annually. In Omskaya Oblast the available housing in the rural areas increased by 41 percent during the 1976-1979 period, the plan for placing living space in operation was fulfilled by 142 percent and an average of 15 apartments per farm is being placed in operation annually. The flow of manpower away from the rural areas has been reduced considerably. During the Tenth Five-Year Plan and compared to the level for the Ninth Five-Year Plan, the average annual indicators for placing dwellings in operation in Kirovskaya Oblast increased by 41 percent, general educational schools and boarding schools -- by 45 percent and kindergartens and nurseries -- by 37 percent. An increase has taken place in these oblasts in the volumes of construction work being carried out on external engineering communications and on hard surface intra-farm roads.

The work of further solving these tasks can be greatly facilitated by the complete development of the existing capabilities of construction and housing construction combines, which are presently being used to only 45-50 percent. The contractual organizations must accelerate the completion of the conversion of all rural combines over to a system of work which includes, in a single complex, the production of parts, their delivery to the construction sites, installation and the complete finishing off of buildings, that is, the complete construction of projects. The contractual organizations in Krasnodarskiy Kray, by way of an experiment, are studying measures aimed at undertaking the additional functions of a general contractor -- the equipping of construction projects with technological and other types of equipment, the carrying out of start-up adjustment work, planning and a number of other functions. The computations with a client are carried out upon the completion and turning over of finished projects for operations.

At the same time, more extensive use should be made of the mixed method of construction, which has been employed successfully in Penzenskaya, Novosibirskaya, Smolenskaya and a number of other oblasts. As a result of utilizing their capabilities more completely, the industrial enterprises are raising to a considerable degree their level of profitability. The capital-output ratio is increasing and also the manufacturing and production of goods. This is making it possible for the clients to raise the durability and prefabrication of projects under construction and to reduce the labor expenditures and schedules required to erect them. The contractors are raising the output, intensifying the volumes of contractual work and improving the economic indicators for the work being performed by the construction organizations. Thus there are advantages for all those participating in construction production, but additional provision should be made for this in the plans for the general contractual program for construction.

Despite a considerable strengthening and development of the production base for construction organizations, the rates of growth for the contractual

method are still lagging considerably behind the requirements for agricultural production, especially in the non-chernozem zone: here they show almost no increase whatsoever.

Last year, on the whole, contracting organizations carried out only 58 percent of the overall volume of construction work. The remaining volume -- 62 percent -- was carried out using the economic method and kolkhos and sovkhos resources. In Ural'skiy Rayon, this method was used for 52 percent of the work, Zapadnosibirskiy Rayon -- 53 percent, Kurganskaya and Novosibirskaya oblasti -- 63 percent and in Tyumenskaya Oblast -- 83 percent.

A thorough study must be made of the requirements of those who carry out construction work using their own resources, the technical level of this type of construction must be raised and assistance must be furnished to the kolkhoses and sovkhoses in organizing permanently active construction departments and brigades, not only for new construction but also for the capital and current repair of buildings and installations.

At the present time, there are more than 60 contractual organizations under the jurisdiction of local agricultural organs -- PMK's (mobile mechanized columns), repair-construction administrations and trusts. In the Bashkir and Chuvash ASSR's, Amurskiy and Krasnodarskiy krays and in Tyumenskaya Oblast, trusts were created subordinate to these organs at active PMK's and repair-construction administrations. These trusts are furnishing substantial assistance to the leaders of farms in organizing new construction and in the carrying out of capital repair work. In Kostovskaya Oblast, for example, the Sel'khozstroy materialy Production Association was organized. It includes lespromkhoz (timber industry farms), forest tracts, brick plants, a construction materials combine for the production of 60,000 cubic meters of crushed stone and gravel and 40,000 cubic meters of stone and a department capable of producing 500 twin-apartment dwellings annually. All of these factors are making it possible for the kolkhoses and sovkhoses to carry out successfully work volumes valued at 200 million rubles.

The decree of the CPSU Central Committee entitled "Further Improvements in the Economic Mechanism and the Tasks of the Party and State Organs" and the resolution of the CPSU Central Committee and the USSR Council of Ministers entitled "Improvements in Planning and Intensifying the Effect of the Economic Mechanism With Regard To Raising Production Efficiency and the Quality of Work" are aimed directly at improving our economy and planning activity and achieving high final results.

Specialists attached to the construction services of our ministry, to local agricultural organs and at kolkhoses and sovkhoses are carrying out work aimed at raising the effectiveness of capital investments and improving the organization of construction and planning in the rural areas. The 1980 plans call for the immediate implementation of a social program for rural development, one which anticipates the creation of a logistical base for field crop husbandry and feed production. Compared to the 1978 plan, capital

Investments for the erection of housing and cultural-domestic projects have increased by 14 percent. Of the funds allocated for the development of animal husbandry, 52 percent was employed for the modernization and expansion of existing farms.

The clients and contractual organizations in the various areas and in the ministries are presently confronted by important tasks associated with the high quality formation of capital construction plans for the Eleventh Five-Year Plan, plans which must be balanced with the requirements of agricultural production and with the available capabilities of industrial enterprises. The plans for developing the base for the construction industry must be coordinated with the plans for developing agricultural production and the contractual organizations and with the potential of the kolkhozes and sovkhozes.

For the most part, there are two services of a client operating within the agricultural system -- joint managements for the construction of large construction projects at sovkhozes, created in the oblast centers, and also inter-kolkhoz UKS's (administration of capital construction) and OKS's (capital construction department), located in both oblast and rayon centers. In addition, there are also such managements at separate large construction projects and joint managements at industrial associations and trusts. Operational experience accumulated over a period of many years by the client services reveals that the work of these services is in need for further improvement and we are constantly working on this problem. In a number of oblasts, for example Pskovskaya Oblast, a single client service has been organized for construction work carried out at sovkhozes and kolkhozes. This service organizes the construction work carried out using either the contract or economic method and it concerns itself with the capital repair of buildings and installations and with the production and procurement of construction materials and structures.

A client is presently obligated to provide the planning-estimates documentation, approved in the established order, for the construction plans for the following year by 1 July. In the case of 18 oblasts, krays and autonomous republics, where the "Orel continuous operation method" has been introduced into rural construction, it must provide the contractual organizations with documentation for a 2-year volume of work. Importance is attached to ensuring that such documentation is prepared and approved in a timely manner by the planning organizations for each project. Special control must be established over the course of all planning work for field crop husbandry, feed production and housing projects.

In a majority of the oblasts, krays and autonomous republics, positive experience has been accumulated by local agricultural organs in carrying out measures aimed at raising the quality of planning and construction-installation work. This work is carried out during the planning stage, when appraising the plans and estimates and also during the construction process. Thus the centralization of orders for the preparation of technical

documentation by the planning institutes, for the erection of projects at kolkhoses and sovkhoses, through the joint managements and UKS's, raised the quality of the initial data considerably and made it possible to reduce the planning schedules and improve the quality of the plans being prepared.

However, individual planning organizations, owing to weak control on the part of the clients in the various areas, are continuing to issue low quality documentation -- containing considerable miscalculations -- they are including in the plans the need for complicated and expensive equipment and materials and they are employing irrational space-planning solutions. These problems lead to alterations in the plans and quite often in the construction work being carried out and to delays and disruptions in meeting the construction schedules. Here an especially important role is played by a committee of experts, which must be replenished with skilled personnel in a systematic manner.

In the preparation of technical documentation for the construction of single and twin-apartment dwellings and simple production installations, use should be made in all areas of the method of zonal coordination of plans, which is already being employed extensively in Novosibirskaya, Omskaya and Tyumenskaya oblasti. During one of its sessions, NSFSR Gosstroy examined the use of this method in Novosibirskaya Oblast and approved the technical conditions for its use. The method of zonal coordination reduces considerably the planning schedules and costs and makes it possible to solve all problems associated with the preparation of planning documentation in an effective manner.

A great shortcoming in rural construction lies in the fact that the staffing organizations of Goskomsel'khortekhnika are not confirming in a timely manner the distribution of logistical resources by dates and suppliers, nor are they coordinating the schedules for delivering equipment to the construction projects, as required for drawing up the contractual agreements. Just as in the past, no solution has yet been found for the question of the responsibility of the staffing organizations for the timely installation of equipment at the construction projects and not for the volume of equipment sold. The interests of the work require the continued creation of installation-completion associations at the sites, since this represents the best form for organizing the assembly, delivery and installation of equipment and the start-up and adjustment of such equipment.

In his speech delivered before the November (1979) Plenum of the CPSU Central Committee, L.I. Brezhnev emphasized that "a decision on the construction of production projects must be made after all factors have been taken into account, factors which ensure the continuous operation of the projects in the future -- raw materials, transport, manpower. Once the decision is made, the capital investments and material and financial resources are allocated for the new construction projects in full conformity with the norms." These and other instructions set forth in the materials of the November Plenum of the CPSU Central Committee and the session of the

that Supreme Soviet must provide the foundation for our work in organizing capital construction.

The current year is the final year of the Tenth Five-Year Plan. The clients and builders at kolkhoses and sovkholes, local agricultural organs and contractual and specialized organizations are confronted by important tasks: not only to ensure fulfillment of the established plans and tasks for 1980, but also to make up for past neglect through the unconditional implementation of the plans for the Tenth Five-Year Plan.

ABPKRIBIT: "Sel'skoye stroitel'stvo", 1980

Inter-kolkhoz Construction

NEWSPAPER SEL'SKOYE STROITEL'STVO in Russian No 6, 1980 pp 1-3

[Article by V. Vid'manov, chairman of the Koskolkhozstroyob'yedineniye Administration: "To Increase the Tempo and Improve the Quality of Work"]

[Text] For our inter-kolkhoz construction organizations, just as for all branches of the country's national economy, this current year, in addition to being the final year of the Tenth Five-Year Plan, is considered to be the base for the formation of the principal indicators for the next five-year period.

Over the past 4 years, the inter-kolkhoz construction organizations performed 10.2 billion rubles worth of contractual work, or 1 billion more rubles of work than during the entire preceding five-year plan.

The 1979 program amounted to 2.7 billion rubles, or three times the volume of work carried out by inter-kolkhoz construction organizations during 1967 -- the year in which Koskolkhozstroyob'yedineniye was formed.

By the beginning of this year, the fixed capital of inter-kolkhoz construction organizations had been increased or replaced to a considerable degree. It amounted to 9.1 billion rubles, or almost two times more than the amount available in 1975.

During 1979 alone, animal husbandry facilities for 1.6 million livestock were placed in operation, poultry factories and poultry farms for 3.6 million head, granaries for 142,000 tons, mixed feed enterprises for the production of 3,100 tons of mixed feed per shift, dwellings for 1.4 million square meters of usable space, schools for 59,800 students, childrens' pre-school institutes for 25,500 children and clubs for 38,200 members. Approximately 4,200 kilometers of hard surface roads were built.

All of this became possible owing to the fact that, commencing with the first days of the current five-year plan, the program outlined during the Third All-Russian Congress of Inter-kolkhoz Construction Organizations for substantial further growth in production capabilities has been carried out in a successful manner. More than 120 plants and production efforts were

established during the 4 year period. A great amount of work was carried out in connection with concentrating the production of construction materials and structures at large enterprises having modern production technologies.

More than 2.5 billion rubles worth of capital investments were made in the development of inter-kolkhoz construction organizations during this period. The capabilities for producing construction materials and structures are constantly being increased. By the beginning of this year, they had been raised to the following figures: production of precast reinforced concrete -- to 6.2 million cubic meters, brick -- to 3 billion units, light fillers -- to 2.5 million cubic meters and crushed stone and gravel -- to 15 million cubic meters.

Scientific-technical achievements and leading experience are being introduced successfully into construction and industrial production operations. Thus in 1979 the degree of use of completely prefabricated construction amounted to 52 percent, or two times more than in 1975.

Approximately 6,000 brigades worked within the system using the brigade contract method. They carried out 1 billion rubles worth of construction-installation work, or 38 percent of the overall volume. Eighty nine percent of the projects were accepted by the clients with grades of "good" or "excellent."

Improvements in the methods of control and in organizing and raising the technical level of construction and industrial production made it possible during the past 4 years to raise labor productivity in construction by 19.2 percent and in industry -- by 15 percent.

Many inter-kolkhoz construction organizations worked in a rhythmic manner and succeeded in fulfilling their plans.

Noteworthy contributions towards implementation of the established tasks were made by the Krasnodar, Saratov, Bashkir, Mari, Kostroma, Kuybyshev, Lipetsk and Perm associations.

The work performed by organizations of the Rostov Association is deserving of special mention. During the 4 year period, they carried out 383 million rubles worth of construction work, of which amount 26 million rubles worth was over and above the plan. They over-fulfilled to a considerable degree their tasks for finished construction output and placing projects in operation and they performed their work with no lagging collectives.

At the same time, serious shortcomings continue to be observed in the work being performed by inter-kolkhoz construction organizations. The administration of Goskolkhozstroyob'yedineniye believes that on the whole the system has not performed up to its potential.

The principal shortcoming derives from the fact that many associations are failing to carry out their tasks for contractual work volumes and for the

production of construction materials and structures, as established during the Third All-Russian Congress of Inter-Kolkhoz Construction Organizations. It was for this reason that, during the 4 years of the five-year plan, they underfulfilled their tasks for construction-installation work by 84 million rubles, they did not carry out their tasks with regard to placing clubs and children's pre-school institutes in operation or those for raising labor productivity and they sustained losses. Poor work was turned in by the enterprises of the construction industry.

During this same period, the inter-kolkhoz construction associations in the non-chernozem zone fulfilled their plan for construction work by only 96 percent -- 120 million rubles less than the task, of which amount, 28 million rubles in 1979.

More than 70 percent of the primary construction organizations did not cope with their plans for delivering finished construction output. In particular, very poor work was performed during the current five-year period by the inter-kolkhoz construction organizations of the Arkhangel'sk Association, who fell behind in the carrying out of contractual work in the amount of 15 million rubles, Bryansk -- also 15 million rubles, Vologda -- 14 million rubles and Pskov -- 12 million rubles.

There have been frequent incidents of our road-construction organizations in the non-chernozem zone failing to use the capital investments and road-construction and motor transport equipment allocated to them in a well thought out and thrifty manner and they have also violated production discipline.

As a result, only 6,800 kilometers of intra-farm hard surface roads were built during the first 4 years of this five-year plan. This is less than one half of the five-year task.

The construction of intra-farm routes has been organized very poorly by the road construction organizations of the Kaluga, Arkhangel'sk, Vologda, Ryazan', Orel and Mordovian trusts.

In the interest of improving this work, we are striving this year to respond in a more effective manner to all instances of mismanagement and waste and to deal very strictly with those who violate planning and state discipline.

Special importance is being attached to the problem of utilization of fixed capital, particularly in the production of construction materials and structures. The fact of the matter is that although the production capabilities are being increased and tremendous capital investments are being allocated annually for this purpose, we nevertheless are not ensuring efficient use of these investments. Hence the capital-output ratio is low. The 4-year plan for the sale of industrial output was not fulfilled; 59 million rubles worth of structures and materials were never delivered to the construction sites.

The councils and administrations of oblast, kray and republic (ASSR) associations must, following an analysis of the status of affairs with regard to the use of fixed capital in industry, correct the existing shortcomings and define and implement a complex of measures for ensuring, during this current year, the complete development of capabilities by each enterprise.

This matter brooks no delay, since our vast amount of fixed capital in the sphere of services for contractual activity is not participating fully or producing the proper return for the construction process. And it is precisely here that we are failing to use the considerable reserves and opportunities that are available for increasing the volumes of contractual work, while simultaneously reducing the number of workers engaged directly at the construction sites.

Experience has shown that even under today's conditions the labor expenditures required for erecting buildings and installations that are ready for operations, with the work carried out using the resources of SSK's (rural construction combine), are on the average one and a half times lower than those for a conventional construction plan. Considerably greater opportunities for reducing labor expenditures in construction are associated with further improving the plant readiness of structures and materials to be used in assembling a building.

At the beginning of the year, there were 28 rural construction combines working for Roskolkhozstroyob'yedineniye. Such a number of SSK's was far from adequate for the system and yet even these were marked by very low output. The rural construction combines must annually carry out 450 million rubles worth of construction-installation work and yet their volume for 1979 was only 120 million rubles worth.

This year the capability will be increased with 22 combines being placed in operation. During 1981 and 1982, each association must have as a rule one or two SSK's, with an SMK (stroitel'no-montazhnaya rabota; construction-installation work) volume of 15-16 million rubles. Thus, roughly 1 billion rubles worth of construction-installation work will be carried out annually using the resources of SSK's of inter-kolkhoz construction associations.

In addition, an analysis of the results of 4 years of the five-year plan testifies to the fact that planning for the construction and production of industrial output was unsatisfactory in many associations. For the most part, the economic indicators were approved based upon the achieved level. The volume of contractual work and output produced was established without taking into account the utilization of existing fixed capital, existing capabilities or the material-technical resources allocated. The organizational-technical measures of individual inter-kolkhoz construction associations were not coordinated with the final operational results of the construction organizations and industrial enterprises. This produced a situation wherein the amount of unfinished construction continues to increase from year to year, with the volume of such construction on 1 January 1980

being 1.2 billion rubles, or approximately 95 percent of the 1980 plan for construction-installation work.

Based upon the decree of the CPSU Central Committee and the USSR Council of Ministers concerning further improvements in the economic mechanism, we must develop and implement measures aimed at raising the level of planning work at all administrative levels.

The principal form of planning for us must be a five-year plan for the economic and social development of the inter-kolkhoz construction organizations, with a distribution of tasks by years. The annual plans must define in a concrete manner only the tasks of the five-year plan for the appropriate year.

In the interest of justifying a five-year plan to a greater degree and commencing with the Eleventh Five-Year Plan, the following should be approved in its structure: balances in material and labor resources, production capabilities and financial balance and the material and financial reserves should be defined.

Guided by the decisions handed down during the 25th CPSU Congress and the positions and conclusions contained in the speeches delivered by Comrade L.I. Brezhnev during the July (1978) and November (1979) plenums of the CPSU Central Committee, the administration of Roskolkhozstroyob"yedineniye and the councils of republic (ASSR), kray and oblast associations, when developing the plan for contractual work and the production of industrial output for 1980, examined measures for accelerating the construction and placing in operation of projects, raising the quality of construction and the production of industrial output and achieving greater utilization of the capabilities of the construction organizations and industrial and timber enterprises.

The overall volume of contractual work for the current year was defined in the amount of 2.9 billion rubles, with the socialist obligations undertaken by the inter-kolkhoz construction organizations being taken into account. This is 6 percent more than the actual fulfillment of the program for 1979. Of this volume, 1.1 billion rubles were to be used in oblasts and autonomous republics in the non-chernozem zone. The clients will be the recipients of finished construction output valued at approximately 3 billion rubles.

The plans call for the volume of industrial production to be increased by 1.3 percent and in the autonomous republics and oblasts in the non-chernozem zone -- by 10 percent.

In order to meet the increasing requirements of our organizations for construction materials and structures, the plans call for the industrial enterprises to produce the following: precast reinforced concrete -- 4.5 million cubic meters, brick -- 2 billion units, porous fillers -- 2.4 million cubic meters, non-metallic materials -- 14 million cubic meters and carpentry products -- 3.8 million square meters.

The principal trend in this year's plan is that of achieving further intensification of construction and industrial production. The plans for republic (ASSR), kray and oblast associations call for higher rates of growth in labor productivity, compared to those which existed during the 1976-1979 period. For the system as a whole, this called for an increase in construction of 4.5 percent and in industry -- 3.8 percent.

During the course of developing the plan, considerable work was carried out in connection with balancing the volumes of construction work with the potential of the inter-kolkhoz construction organizations and the material and technical resources per million rubles.

The capital investments to be used for developing the internal base, for the system as a whole, were retained at the level for the preceeding year, but at the same time they were coordinated with the growth in the volumes of contractual work and they are being employed mainly for completing projects started earlier and for the modernization and technical re-equipping of existing enterprises.

More stern tasks were established in connection with achieving economies in the use of construction materials, fuel and electric power. For example, the plan for Roskolkhozstroyob'yedineniye on the whole called for the following savings: rolled metal -- no less than 2 percent, boiler-furnace fuel -- 5 percent, electric power -- 3 percent, motor vehicle gasoline -- 2.5 percent and also considerable savings in other materials by lowering the norms for their consumption and by carrying out organizational-technical measures aimed at economizing in the use of material resources.

This year's plan contains raised tasks for introducing scientific-technical achievements and leading experience into construction and industrial production. This year we must raise the volume of completely prefabricated construction to 57 percent of the overall volume of construction-installation work, increase the volume of large-panel and prefabricated-unit construction of apartment and cultural-domestic buildings to 700,000 square meters of overall space, produce and employ in construction 708,000 cubic meters of pre-stressed reinforced concrete structures, 86,000 cubic meters of pile-supported foundations, 915,000 cubic meters of supporting and enclosing structures made out of light concretes and 115,000 cubic meters of wooden structures and raise considerably the level of engineering preparation and the introduction into operations of flow-line construction methods, based upon weekly and daily planning and dispatcher control.

We must employ the brigade contract method for carrying out 1.2 billion rubles worth of work, or 45 percent of the overall volume of construction-installation work. Technological specialization in construction will be raised to 56 percent.

By means of improvements in the quality of construction and in the industrial products being produced, the plans call for no less than 91 percent of the overall number of production, housing and cultural-domestic

projects completed to be placed in operation with an evaluation of "fine" or "outstanding".

The implementation of the measures planned for the technical development of inter-kolkhoz construction associations will make it possible during this current year to achieve a labor economy in the form of 20,000 individuals and a savings of 120 million rubles. These are considered to be great and difficult tasks.

This year, in order to provide assistance to backward organizations and enterprises and successfully complete all construction-installation work and produce the industrial output in the established volumes, certain requirements must be met -- there must be greater exactingness and organizational ability, more efficient actions and a creative attitude must be displayed towards the work being performed.

We have at our disposal all of the conditions required for fulfilling and over-fulfilling the 1980 plan: a powerful construction industry, a vast amount of construction equipment and trucks and trained cadres of workers, engineering-technical personnel and office employees. The inter-kolkhoz construction associations have considerable reserves at their disposal.

The operational results for the first quarter have clearly revealed that the appeal by the CPSU Central Committee calling for the extensive development of the competition honoring the 110th anniversary of V.I. Lenin's birth and for making the final year of the five-year plan a year of work carried out in the Lenin tradition, an appeal which has been warmly received, should be consolidated in all of our labor collectives.

An efficient construction rhythm should be achieved in all areas and each construction organization, industrial enterprise and planning institute should fulfill its established planned tasks and socialist obligations.

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Nonchernozem Development

Moscow SEL'SKOYE STROITEL'STVO in Russian No 6, 1980 pp 21-22

[Article by A. Ternovskiy, member of a Committee on Problems of Development of Nonchernozem Zone of RSFSR of All-Union Council of Scientific-Technical Societies: "Inter-kolkhoz Rural Construction Combines in the Nonchernozem Zone"]

[Text] The collectives of inter-kolkhoz construction associations consider the creation of new rural construction and house-building combines and also improvements in existing ones to be the principal trend with regard to developing their own production-technical base. This new and progressive form for organization and control in rural construction alone will make it possible to carry out large-scale operations in the nonchernozem zone and their production-economic activity alone will ensure a high level of

effectiveness in construction production and make it possible to accelerate the placing in operation of fixed capital in agriculture.

At the beginning of this year, there were 14 rural construction combines with an annual planned capability of more than 1 million square meters of overall space in agricultural production, housing and public buildings in operation in the nonchernozem zone within the Roskolkhozstroyob'yedineniye system. In addition, nine more rural construction combines will be placed in operation during the year. Thus, during the final year of the Tenth Five-Year Plan, rural construction combines will be in operation in almost every oblast and autonomous republic in the zone. Their number will amount to approximately one half of all Roskolkhozstroyob'yedineniye SSK's [rural construction combine] and SDSK's [rural house-building combine] and the volume of work fulfilled by them will increase by more than twofold over the figure for 1979 and exceed one half of the construction volume carried out by all combines of interkolkhoz construction associations in Russia. They are performing approximately 14 percent of the work volume planned by Roskolkhozstroyob'yedineniye organizations in the nonchernozem zone.

The majority of the rural construction combines in the zone are complex in nature. In addition to production facilities, they also produce assemblies for large-panel housing construction and they build agricultural production, housing and public buildings. The selection of this type of combine was conditioned by the need for a complex building plan for rural populated areas in the nonchernozem zone and by a high concentration of rural construction.

In justifying the creation of a particular combine, priority attention is given to the efficiency of its operation, which is dependent upon the size of the zone serviced by it. Thus the combines, both those created earlier and those being organized at the present time, usually are of the zonal type, with the average distance between the construction sites and the combine not exceeding 120-130 kilometers.

In a number of oblasts where there is a high concentration of rural construction, two and even three combines are being created. For example, in Kalininskaya Oblast the oblmezhkolkhozstroyob'yedineniye will have three combines; the Kalinin Experimental Rural Construction Combine is already in operation and the Bezhetsk and Rzhev combines are in the organizational stage. Two combines are to be placed in operation in Gor'kovskaya Oblast, two also in the Chuvash ASSR and so forth.

A proper zone for the production-economic activity of the Kalinin ESSK [eksperimental'nyy sel'skiy stroitel'nyy kombinat; experimental rural construction combine] during the 1980-1981 period is a territory consisting of four rayons and having an average distance of 50 kilometers between the combine and the construction sites and for 1982 and subsequent years -- 10 rayons in the oblast having an average distance of 85-100 kilometers. In

addition to the construction of rural production buildings, the Kalinin SSK also specializes in the production of single-story farmstead type dwellings of prefabricated-unit construction.

A similar zone of activity was also determined for the other two combines -- Rozhetsk and Rzhev.

The zone of activity for the Smolensk SSK is 50-130 kilometers, for the Gusev SSK of the Kaliningradskaya Oblast Inter-kolkhoz Construction Association -- 60-80 kilometers and so forth.

The SSK's of Roskolkhozstroyob'yedineniye are industrial-construction complexes which, based upon a single production cycle, produce agricultural production, housing and public buildings, using an established nomenclature of sets of structures and parts, transport these sets to the construction sites, carry out the entire complex of construction-installation work and, jointly with the general contractor (for sub-contractual activity) ensure the placing in operation of the projects. They carry out their work mainly as sub-contracting (leading sub-contracting) construction organizations and yet in a number of areas they also perform the functions of a general contracting organization.

The conversion of Inter-kolkhoz SSK's and SDSK's over to carrying out a complete complex of construction-installation work, with the projects being turned over for operation, commenced for the most part during the past two years (following the July (1978) Plenum of the CPSU Central Committee). In 1980 they must turn over approximately 0.6 million square meters of overall space in the form of different types of buildings.

The production-economic activity of SSK's in the non-chernozem zone convincingly underscores the fact that, compared to conventional construction organizations and industrial enterprises, they possess indisputable advantages. Here are a few examples. The Smolensk SSK, which carries out a complete complex of construction-installation work in the amount of 6.1 million rubles (an increase of 12.7 percent since 1978), over-fulfilled its plan for placing projects in operation by a factor of almost 1.5 and achieved an output for one worker of 14,314 rubles, thus exceeding its planned task by 7.8 percent. In the process, the plans for obtaining a profit balance, profitability and other indicators were surpassed and 72 percent of all industrial output produced by the combine was consumed by its construction subunits.

At the Saransk SSK in the Mordovian SSK, the volume of construction-installation work reached 10.3 million rubles, the output for one worker amounted to 14,592 rubles, the plan was over-fulfilled by 11.4 percent and growth exceeded the figure for 1978 by a factor of almost 1.5. At the Sovetskiy SSK in the Mariyskaya ASSR, the output for one worker was raised to 12,099 rubles, with growth of 13.5 percent compared to 1978 and so forth.

Thus, compared to conventional construction organizations, labor productivity at SSK's of *sovkolkhozostroyob'yedineniye* in the nonchernozem zone is higher by a factor of 1.5-1.7.

Highly mechanized industrial-construction complexes, such as SSK's and SSK's, which are characterized by complete technologies and a high level of engineering preparation, are capable of mastering the production of buildings and installations which meet modern scientific and engineering requirements and which are in high demand by rural workers. In addition, the possibility is becoming available of carrying out all of the principal construction processes under plant conditions.

Here are several examples of effective work by combines.

The Kalinin ESK of the oblast inter-kolkhoz construction association commenced the production, under plant conditions, of single-story dwellings of prefabricated-unit construction, using a plan developed at the Mozhnechernozemindustroyekt Institute. The rural residents had been waiting for some time for such dwellings. They are attractive in terms of both their exterior appearance and interior finishing off and they offer comfortable daily living. Basically, they appear as single-story farmstead type three-room dwellings consisting of five prefabricated wood and concrete modular units. The first prefabricated unit is a common room 18 square meters in area, the second -- kitchen-dining room (10.97 square meters). Here one also finds a household pantry, a cupboard and an entrance hall. The third unit contains a bedroom for two children (12.62 square meters) and a lavatory with a wash-basin; in the fourth unit -- a bedroom for the parents (12.62 square meters) and a bathroom used for washing. The fifth unit is a household facility (kitchen) containing a drying room with registers for the drying of clothing, a cold pantry and a summer facility (veranda).

Between the units there is a vestibule entrance, a special household lobby and a cold pantry. These facilities separate the apartment into two zones -- living and domestic. The services in the domestic zone satisfy the requirements of the private economy and are located in the fifth unit and in the space between units. From the kitchen there is a separate exit which leads to the private plot. The house has a garret and an underground facility in which to store fruits and vegetables.

The house is equipped with hot and cold running water, central heating and other conveniences. In the absence of a boiler, use can be made of a variant of self-contained heating.

The workers attached to the Kalininskaya Oblast Inter-kolkhoz Construction Association introduced new elements into the prefabricated unit structures which make it possible to reduce their supporting capability and have several openings of different sizes in the walls, a feature which is especially effective in connection with the installation of verandas, household facilities and so forth.

The complete plant readiness of the room units is deserving of attention. The rooms are delivered to the sites where the dwellings are being erected with the following elements installed: partitions, baths, commodes, washing machines, stoves, wallpaper, covered walls, decorated ceilings, windows, doors and built-in furniture and with linoleum laid on the floors. The work on all internal engineering lines -- hot and cold running water, sewerage, heating and electric power -- is carried out under plant conditions.

Only a limited amount of work is carried out directly at the site: the installation of the units, connecting up of the external networks and the boiler, a number of operations associated with the installation of roofing and certain finishing work following the installation operations. As a result, labor productivity during the erection of such dwellings increases compared to other types of completely prefabricated buildings used up until this time. Only several days are required by one small brigade to prepare such a dwelling for occupancy. These same prefabricated room units are being used for erecting barns, garages and other services.

Once the planned capability is achieved, 50,000 square meters of overall space will be produced in the form of such dwellings.

During the course of erecting the dwellings, the combine proceeds in the manner of a general contracting construction organization, carrying out a complete complex of construction-installation work in three flow lines -- site cycle, installation work and post-installation finishing-general construction work. It has been stated that the installation of a prefabricated room unit can be carried out by a 16-ton crane. Specialized sub-contracting organizations are required for carrying out electrical and sanitary engineering installation work and also equipment installation work.

Last year the capability of the Kirov SSK, which is also a complex unit, began to increase in a stable manner. Although Series 25 dwellings and public buildings are still being built using the existing capabilities of the combine, at the present time construction has commenced on houses of the farmstead type, with parts being produced for an improved variant (Saratov variant) of this same series. When the second phase of a reinforced concrete products plant having a planned capability of 50,000 cubic meters annually is turned over for operation, it is expected that the combine will convert over to using the Improved Series 135 for erecting dwellings and public buildings.

For the next few years, it has been recommended that the zone of production-economic general sub-contracting activity of the Kirov SSK consist of 15 administrative regions throughout the oblast, with the distance of the projects under construction from the combine not to exceed 70-90 kilometers. Here the combine will carry out a complex building plan for the rural areas.

New and only recently obtained cassette units which make it possible to raise the plant readiness of the products to a considerable degree have now

work material at the Kirov ZhBI (reinforced concrete products) plant. A specialized PMK (mobile mechanized column) has been created for carrying out "zero cycle" work and for installing engineering lines of communication. The completion of projects under construction is carried out on the basis of an integrated schedule: production of industrial products, transporting them to the construction areas and the erection of the buildings proper.

The work tempo of the Novgorod SSK, which also carries out the construction of residential, public and production buildings, is also increasing. The zone of activity for the combine is on the order of 80-100 kilometers. It is building Series 25 twin-apartment dwellings, with all types of work being carried out with the exception of public services, engineering networks and preparatory period work. The latter types of work are carried out by conventional general construction and specialized organizations. The agricultural production buildings are erected completely by the combine.

The Kama SSK of the Udmurt republic's inter-kolkhoz construction association achieved high results last year. For having achieved high results during the All-Russian Socialist Competition and for having successfully fulfilled the plan for economic and social development in 1979, the RSFSR Council of Ministers and the AUCCTU declared it to be the winner and awarded it the challenge red banner of the RSFSR Council of Ministers and the AUCCTU.

During the final year of the Tenth Five-Year Plan, the Kama SSK has become one of the initiators of the socialist competition for collectives of leading SSK's during 1980. In particular, it has vowed to provide the client with completely finished dwellings of the farmstead type having an overall area of 12,000 square meters, to produce sets of structures for 200 twin-apartment dwellings of the farmstead type, to carry out 80 percent of the total volume of construction-installation work using the brigade contract method and so forth.

Successful work is being performed by other SSK's of Roskolkhozstroy-ob'yedineniye in the nonchernozem zone of the RSFSR, with annual improvements being noted in their production-economic activities.

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ACHIEVEMENTS IN CHUVASHSKAYA ASSR'S CONSTRUCTION PRACTICES CITED

Moscow SOVETSKAYA ROSSIYA in Russian 29, 30 Apr 80

[Two-part article by V. Ovcharov and V. Selivanov]

[29 Apr 80, p 2]

[Text] 1. What Lies Behind the Report Figures?

No matter with whom we talked, no matter how many questions we posed, the conversation would always begin with summed-up numerical figures. And they are indeed impressive. The total volume of assimilated construction and installation operations during the five-year plan in the Chuvashskaya ASSR exceeds a billion rubles, while capital investments in the development of agriculture amounted to 629 million rubles. And this means that the republic's economic potential has been fulfilled in hundreds of large and small projects, while the inhabitants of cities and villages have received thousands of well-built houses and buildings for cultural and everyday purposes.

And so, figures, if they are skillfully presented, make a serious impression. And, of course, practical-minded people know this trait of figures very well, and in necessary situations make artful use of it. But these same figures, if they are regarded merely as an indicator of triumphant progress, are capable of leading some people into error and engendering unjustified optimism in others. And symptoms of this kind have begun to appear quite noticeably. We talked with obkoms secretaries, with the director of the construction division, A.N. Mart'yanov, the chief of the Chuvashskoye Territorial Const. - tion Administration, Ye. A. Tyrtyshtnyy, a number of secretaries of Party ra. - oms, and in all cases the conversation began with achievements, while it ended with a brief excursus into the future. And there again were "scope" and "scale". With regard to the figures standing behind the triumphant outline, here there was an obvious change in the major key for the comrades. Comrade Mart'yanov, for example, for a long time and very unwillingly counted those projects which were supposed to be completed and handed over last year and the year before, but eventually he lost count. Because, you know, there are not just a dozen or so of such projects. It is certainly hard to believe that the director of a sector division would not know the state of affairs with regard to his sector's

current progress. Most likely he simply was not inclined to stir up something capable of engendering doubt and a lack of confidence.

But they are possible. For behind the triumphant outline 80 million rubles have remained unassimilated. We shall not translate these sums into the apartment houses which do not exist, or into the production facilities (also non-existent) which were designed to provide output for the country. Let us merely note that these millions were programmed along with material and technical resources, and that other construction projects are experiencing an acute need for them.... It would be naive to think that in the republic they are not aware of the consequences of such economic management. And if this is so, then the following question arises of its own accord: what is this--a lightminded approach to plan formulation or gross miscalculations in determining the potentials of the industrial base and manpower resources in the construction organizations? Such a idea should not be excluded either. But the fact of the matter is that errors were not even allowed. And again the statistical data bear witness to this.

When there is no basis for disputes and protests, then people have acted in this republic in accordance with the following principle: they give, so take. If we don't assimilate, then temporise, give assurances.... So it happened on more than one occasion: they temporized and were scolded for their "sins of omission." Then the whole thing was repeated all over again and with the same consequences. But they did not refuse the money. The builders would energetically lay the foundations, erect the walls, and leave the shells, similar to the ruins of ancient castles, to await their turn. Because they, the builders, were already expected on other projects.

And what happens as a result? At the plenary sessions of the obkoms and at meetings of the Party active membership the unsuitable practice of dissipating funds on numerous construction projects is harshly condemned, but meanwhile the amount of projects in an unfinished state of construction has not been substantially reduced. By the beginning of last year, for example, they numbered about 475, and almost the same number of new ones were added to them. But the clients demand the handing over of the start-up production facilities within the allotted time periods. The USSR Ministry of Construction sends out strict orders: assurances must be given to the territorial administration, efforts must be concentrated, and so on in a similar vein. Everything within the limits of the regulations and the agreed-upon time periods. But what happens on the spot? Let's say at a plant manufacturing industrial tractors they are already preparing to turn over an experimental workshop for the third time now, and, for the time being nobody can be sure whether or not it will be accepted this time either. And this is not without grounds, for here it has already become the norm to hand over projects at the second or even third submittal.

One of the directors of an enterprise being renovated remarked half jokingly, half seriously that at the end of the year he was experiencing such

pressure that high blood pressure seems amusing. They apply pressure: take it! And not everybody holds out. Under such pressure during the last days of the year in Kanasha they undertook for operation a complex of structures at a power-loader plant which is among the country's most important construction projects. But now the plant director, V. K. Kokarev, bitterly remarks:

"And so we did accept it, and construction work is continuing on to this very day."

It was accepted and...not accepted. Moreover, in the statistical reporting this turned-over project was entered in the schedule with the enigmatic formulation "accepted conditionally." It is difficult to believe that the ministries concerned are unaware of the following truth: the country needs not "conditional" but operational capacities. And if this is so, therefore, the responsible comrades who signed the formal document concerning the turning over and acceptance of this project were guided not by state but by short-sighted, narrowly bureaucratic interests: let's put it in the report, and then we'll finish it up. It is strange: who are these people deceiving?

Let's say it straight out: it is an unsuitable and harmful practice. But it turns out that it has not been harshly condemned by the Party. Perhaps, even the converse is the case: in a certain sense, it is encouraged. Understandably not in official speeches but in private, confidential talks. In the obkom we had occasion to listen to reprimands directed at the clients: it was said that they were being frivolous, but it was not specified as to how this was being manifested. Or is it the case that this same directorship of the industrial tractor plant does not wish to see the workshop included among those facilities turned over "conditionally?" And, as regards their serious clients, the attitude towards them is very favorable. They are not scolded but rather put up on the board and honored as businesslike organizers and ardent patriots of their city. The directors of the Cheboksary Municipal Housing Administration are also included in this category. At the end of the year they manifested an enviable haste in drawing up the formal documents for the acceptance of housing on an operational status, and this made it possible for the gorispolkom to report the over-fulfillment of the plan with respect to housing construction. However, three multistoried apartment houses were occupied only at the beginning of April.

And one gets a sad picture from all this. Operational plant buildings are commissioned, but the state does not receive any output from them; apartment houses are turned over, but people cannot live in them. Why do such things become possible? Why do some responsible comrades enter upon the path of directly deceiving the state merely in order to look good in the reporting statistics? Because, it is thought, in crossing the limit of the allowable, people are confident that everything will be out of their hands. In any case, they have gotten by with it for the time being. Not one of these serious contractors or clients has undergone any harsh Party or administrative-judicial punishment for actions which are against the law.

And now let us imagine the following well-known, idyllic picture. A project is being turned over, ornately puffed-up speeches are being delivered about the outstanding achievements on over-all and local scales, and there is thunderous applause. But after this triumphant ceremony people work for months in order to install the machine tools in the workshops and open the doors of the apartment houses for their new occupants. Do the comrades think, as they transform uncompleted projects into finished ones by their signatures, about the moral consequences of such manipulations? Are they aware that deceit, in no matter what beautiful package it may be presented, with no matter what lofty words a smoke screen may be set up around it, remains a deceit and does not bring about a delighted reaction? Hence it engenders among people a feeling of a lack of confidence in themselves and an indifference to the calls addressed to them.

And, nevertheless, construction in the cities, taking into account all the serious breakdowns, can, in no way, be compared with what goes on in rural construction. Here the time periods for turning over even the most minor projects are extremely conditional. Even the fate of those construction projects which have been included in the list of particularly important ones, for the most part, cause little alarm or disturbance to anyone. The "Chuvashsel'stroy" Trust, for example, delineated seven start-up projects as top-priority items, but it turned over only two of them. And this is not an exception to the rule. During the past period of the five-year plan this republic failed to put into operation indoor areas for 12,000 head of cattle, many thousands of hectares of pastureland under irrigation, and suitable haylots.

Meanwhile, on many farms the buildings which were constructed during the 1930's are literally being propped up on supports. Is it necessary to prove that with such accommodations it is scarcely possible to think seriously about the growth of livestock and an increase in its productivity?

In its own time there was observed in the republic an unsurpassed striving to build large-scale livestock-breeding complexes. We are not even speaking about those farm buildings which have been propped up on supports or about those which have required only minor renovation. They were a reflection of yesterday and could not compete with the future giants. Hence there was no place for them in the builders' plans, as, on the other hand, there was in the everyday concerns of the agricultural organs. There is no disputing it: the future belongs to large-scale farm buildings. But, of course, they do not arise from nothing. Spacious areas can be filled by these same kinds of small farm buildings. However, in the blazingly attractive heat of gigantomania such details were not taken into consideration. As a result, an unbridgeable gap was formed between the program forecasts and the actual possibilities. Six years ago in the Kozlovskyy Rayon, for example, a pig-farming complex began to be built for 24,000 head, but even now it is only slightly more than half-finished. Of course, they were counting on a rapid economic effect. But it turned out that in comparison with the last five-year plan meat production in this rayon decreased; the four-year plan was fulfilled by only 79 percent.

Such are the results of un-thought-out decisions in determining the realistic possibilities of this or that sector.

Matters stand even worse with regard to projects in the so-called non-production sphere. Not even half of the insignificant sums of capital investments allocated for the construction of clubs have been assimilated. The plan for introducing into operation children's pre-school institutions has been fulfilled by 73 percent, and that with regard to housing--by 58 percent. On the Shumerlingakyy Rayon's "Kombinat" kolkhoz, for example, an 18-unit apartment house has been "under construction" for the fifth year, but to this very day the walls of the second story have not been erected.

And while there is no housing, it is impossible to fill out all units with literate specialists. There is no good base for the people's cultural recreation and spiritual development and, therefore, no possibilities for retaining personnel in the rural area. Let us note, by the way, that until recent times Chuvashiya was characterized by quite a stable rural population. Now these times are only memories, and many kolkhozes and sovkhoses are experiencing an abrupt manpower shortage. About ten years ago 1,960 persons lived in the Rechnoy settlement of Shumerlingakyy Rayon, but only slightly more than 800 remain. The very same thing is to be observed in other rayons as well. More and more "dying" villages are taking shape, where old people are living out their remaining years.

It is said that village life cannot be compared with that of the city nor agricultural production with industrial production. And therefore, perhaps, it should come as no surprise that young people are leaving their native places without regrets. Is this so? Let's turn to some examples which refute such assertions. In the central area of the Kozlovskiy Rayon's "Rodina" Sovkhoz livestock-breeding complexes have been built, where all the processes have been mechanized and automated. Also situated here are a motor pool and a workshop. In the general nature of the work there is little to distinguish it from the labor of industrial workers. But the young people do not take root in this settlement. But here now is the village of Bishevo, about ten kilometers distant from the central area, the most recent school graduates willingly go to work in the farm buildings and in the field. What is this --a reconciliation to one's destiny on the part of some and an extreme fussiness on the part of others? No, of course not. The point is that in Bishevo more favorable conditions have been created for cultural recreation than is the case in the central area.

Granted that this is only one feature in the entire complex of the spiritual needs of the present-day village inhabitant as well as their satisfaction. But there are many such features. If apartment houses are not being built, that means that there is no hope for housing among the young people. Let's assume that the young people became reconciled with this inconvenience and remained in their father's house. But then a child appears, and there is no place to send him; children's nurseries have not been built either. In

addition to all this, there is no medical clinic, sewing workshop, or public eating place. Furthermore, not every village has a store. And, if we were to list everything which exists in plans but is lacking in actual fact, then it would become more understandable while the villages are emptying out and dying.

It would, however, be erroneous to think that behind of scale of construction operations the CPSU obkom does not see serious breakdowns in the sector's vital activity. Of course, it sees them. It is another matter with regard to what conclusions are drawn from this, what evaluation is attributed to the facts of the irresponsible attitude of personnel to the matter entrusted to them.

More about that in the following article.

[30 Apr 80 p 2]

[Text] 2. Non-obligatory Obligation

In the office of the construction division chief, A. N. Mart'yanov, in the middle of the wide conference table there lay wheel-printed socialist obligations. In them was fixed the date for the completion of the builders' annual plan--29 December. We also became acquainted with the obligations of past years. They resemble each other like twins: they have the same terminology of "completing the program ahead of schedule," the same list of achievements, the same criticism of shortcomings, and the conclusion common to all of them: the annual plan has not been fulfilled. Not even to speak about the obligations.

To be sure, judging by the assurances of responsible comrades, made from the republic's rostra, the past ought not to be repeated. But similar assurances were delivered previously also with no less ardor, and they have had to be repeated at the beginning of each succeeding year. And so they have not managed to pave over the road to the finish with speeches. Obviously we must look intently at the past and try to make sense out of it. Because the path we have travelled, no matter how bitter it may have been, contains within itself food for thought. And there is plenty to think about. Let's turn to a few examples. Last year per worker output in the largest territorial construction administration was equal to 96 percent, and in certain of its subdivisions scarcely reached 80 percent, of the plan. During the elapsed period of the five-year plan losses of workers' time by the most modest estimates, amounted to about 190,000 man-days. In the Chuvashsel'sstroy Trust every third member of the group took an unauthorized absence from work. And if to this one adds the non-productive downtimes of construction equipment and machinery, then it becomes more understandable on what the assurances are based at the beginning of each year and why they turn out to be unsubstantiated later.

And so, we must not tolerate past errors. In connection with this, it seems advantageous to carefully study the following: where, in what unit--in production and administration, at the blame of which services and specific supervisors were such colossal losses permitted? Why did the Party organizations at the construction projects, the CPSU raykoms or gorkoms not manage

to prevent disruptions. Finally, why do the means of organizational and political action not exert any noticeable influence on the strengthening of labor discipline and the improvement of labor organization.

Let us say right off that there is no such study; furthermore, these problems do not seem to bother the workers of the Party apparatus. This is far from stating that the obkom does not pay the necessary attention to the sector. On the contrary, during the first three months of this year the bureau discussed construction problems six times. And so it is not a matter of lack of attention but rather, we think, that the focus is not on the complex problems determining the sector's development but instead on its individual projects. And they are still at that stage where "supplementary measures to speed up construction" or simply "speed-up measures" are being demanded. But when timely measures are necessary, they are reflected in resolutions. In one of these, for example, it is strictly specified by what date "delivery must be made on 143 units of fencing enclosure panels, and 3,500 cubic meters of sand must be shipped in, along with 7,200 cubic meters of gravel...." But is it necessary to have a Party resolution in order to complete a fencing enclosure or to haul sand? Perhaps it would be more feasible and useful to hold strictly accountable those managers who have an irresponsible attitude toward a matter entrusted to them and whose fault it is that a critical situation has taken shape in a start-up project. And by assuming for itself the administrative-distributive functions, the bureau thereby exhibits an unjustified condescension to those who are specifically at fault, and this does not work to the advantage of training personnel in the spirit of obligation and performance.

Of course, there are circumstances when Party organs must have recourse to what are called extraordinary measures. But this must be an exceptional case rather than a regular practice. Unfortunately, such "exceptional cases" in the obkom's operational practice have turned out to be not so rare. At the beginning of the year the bureau instructed the divisions in January and February "to adopt specific measures to assure the construction projects of plans and estimates, equipment, items, and structural components." And it is not without grounds that this resolution caused dissatisfaction among the workers in the apparatus. Yes, they were obliged to establish controls over performance. But why did they have to provide "assurances?" And why did they have to "assure" construction projects of plan documents in February if such documents should have been ready as far back as October of last year?

Well, whatever the problems may be, it is necessary to carry out one's assignment. And Mart'yanov, chief of the construction division, has no other recourse but to sit at his desk, receive all the clients and contractors, and, as he put it, to "settle" with them all disagreements and misunderstandings. And here is what is curious. Serious people gathered together and discussed serious matters, but, meanwhile, by mid-March the Stroybank could set up financing for only four construction projects, and there were plans and estimates in document form for only a fifth of the total amount of construction. With regard to the projects of the Cheboksary gorispolkom there were no plans

right up to April. It turns out that the sessions did not exert any sort of noticeable influence upon the implementation of the Party resolution. Today this very fact may be perceived as an organizational miscalculation. But in the future this miscalculation can cost us dearly. The fact is that since the very beginning of the year such a tangled knot has been formed that it will be extremely complicated to untangle it in the future. Because, if there are no documentary plans and estimates, therefore, there is no possibility to receive material resources on time and in the complete products list, for a miscalculation of amounts will lead, when averaged out, to the so-called million." Under such conditions it is difficult to calculate both the exact organization of construction operations, as well as the reduction of losses of worker time and those of forced idle times of machinery.

In a conversation with us the chief of the territorial-construction administration, Comrade Tyrtyshtnyy, remarked that, in his opinion, the oblast committee should devote more attention to the sector's development. That is, it should concentrate the efforts of Party and economic workers on solving those complex problems which determine the sector's present and future, and by its inherent organizational and political means to actively influence all aspects of the production and social life of the many thousands of persons in the builders' group. To supervise specifically does not at all mean that it is the bureau's duty to distribute motor vehicles, and gravel. Under such a system there would not be enough time or strength left to solve more urgent problems. For the time being that is how it is working out.

We have tried above to demonstrate on the basis of facts that the sector's backwardness to a decisive degree has been determined by the poor organization of labor and production. By itself alone this problem merits a special discussion on all levels, and, one must assume, this will happen at some time. Moreover, to a certain degree, this also finds reflection in measures of the obkom, which is proposing to assure the mass introduction at construction projects of advanced technology and progressive production methods, to convert no less than 39 percent of the construction and installation brigades to the new form of economic accounting--the brigade contract. And again we have not refrained from using the administrative term "convert," as if it were a matter of the mechanical transfer of people from one project to another. But this process is quite a bit more complex, both in a social as well as in an organizational sense. Let's allow, however, that they will be "converted." But what about those who have voluntarily accepted the new form of economic accounting? In Alatyr there was one brigade, and it fell apart, since its supply of materials could not stand any sort of criticism. And here is the testimony of N. Trofimov, the supervisor of a specialized brigade working at the industrial-tractor plant:

"It sometimes happens that you don't even know where you'll be working the very next day. They throw us from place to place. In January they chased us from one project to another. As a result the monthly plan was fulfilled by only 18 percent. I'm even ashamed to cite this figure. It is not our fault but that of those people who plan and organize the work of the

brigades. By the way, it is for this reason that many other groups have started off the new year not too well. Competition at a construction project is organized on a formal basis. Here now we concluded an agreement with N. Kargin's brigade, but we don't know who is ahead today. There is no clearly visible indication of work results.

And so what is happening? The obkom demands the "mass introduction" of progressive methods of labor organization, but these correct demands, as it were, do not reach the Party organizations or the supervisors of the construction sections. Why is this the case? In order to answer this and many other questions, we must dwell on the problem of problems: the work of personnel and the work with personnel. It would be incorrect to consider that construction lacks any objective difficulties. But it would also be incorrect to close our eyes to the fact that many difficulties emerge and grow to unsurpassable dimensions due to the direct fault of specific workers. Sluggishness and an absence of good order in actions, non-fulfillment of duty and a lack of Party discipline in some part of the managerial personnel--these are most frequently the primary reasons why the Party organs must expeditiously adopt "urgent measures" for completing a facility at this or that project.

This year the builders began quite well. They successfully coped with the the first quarter's plan for construction and installation operations, although they did not assure the assimilation of capital investments. We must not, however, forget the bitter lessons of the past in order that we may not repeat former mistakes. But they are already making themselves known.

Let's take the following example. In the city of Alatyr this year a cheese-making plant was supposed to be put into operation, and it had been relegated to the category of the most important construction projects. The time came for the installation of its technical equipment and its assimilation. But there was nobody to do the assimilating. The enterprise's director was unacquainted with the specifics of cheesemaking and felt himself to be a temporary person in this position. Furthermore, there is no chief engineer, electrical engineer, or chief machinist. This enterprises also lacks the most important figure--a chief technologist. Let's assume, however, that "supplementary measures" will be adopted, and the project will be turned over. But will it operate at its rated capacity? This question is not an idle one, for to this day it is not clear where the milk must come from: the Alatyrskiy Rayon is capable of furnishing only half of it.

We related all these lacks of coordination to the deputy chairman of the republic's Council of Ministers, Comrade Kosarenko, and we were extremely surprised at his reaction. He did not become irritated, even if, for appearance's sake he did not get excited, even though he is a responsible official, and he answered with a smile:

"I am in charge of construction. Another deputy is in charge of production."

What a cold indifference wafts from these words! He is "in charge of" construction, and nothing else interests him. But, of course, he knows, or at least he ought to know, that the Council of Ministers has not solved the problem of assuring the enterprise of a cheese supply and that the client is not ready to operate the plant. But this matter does not concern him. Involuntarily the following question arises: has not such an interdepartmental boundary, which divides the workers of one solid institution, become the cause of the fact that after six years the pig-breeding complex in Kozlovskiy Rayon is operationally only half full? Won't the very same thing happen in the case of the cheesemaking plant?

Why does such indifference, from which many misfortunes begin, become possible? We think that it is because the Party organs exhibit an unjustified liberalism in evaluating the true businesslike qualities of workers. Builders, for example, year after year let their plans fail, but Comrade Kosarenko, who, as he says, "is in charge of" the sector, does not bear personal responsibility. Then for what is he responsible?

Liberalism also engenders a lack of responsibility. Let's turn to another example. Last year the obkom bureau in the course of carrying out its own resolution listened to a question concerning the progress of rural construction. The situation with regard to implementing the plan was such that one could have expected a sharply critical appraisal of the work of the construction projects' supervisors. There followed, however, an inexplicably mild resolution with a stereotyped definition of the shortcomings. The chief of the "Cheboksargesstroy" Administration, Comrade Yerokhin, "had not adopted the necessary measures," the manager of the "Chuvashsel'stroy", Comrade Cherezov, as well as the directors of the "Kolkhozstroy" Association had also not "taken all possible measures."

But neither did they subsequently "take all possible measures." With respect to the projects of Nechernoze'm'ya "Cheboksargesstroy" fulfilled its plan by only 39 percent. At the beginning of the present year the bureau has again returned to this same question. This time three directors were reprimanded. Well now, it's time to put an end to admonitions and to proceed to a strict inquiry. But here is something which remains unexplained: the Party investigations of Communists are, for some reason, being explained by a joint resolution of the Council of Ministers and the obkom bureau.

Let's repeat ourselves: in the obkom as well as in the Party raykoms a great deal of attention is being paid to production matters. And, it is thought, important questions of Party political work are being omitted, along with those pertaining to the activities of primary organizations, problems of the moral education of builders, and increasing the role of labor groups in the social life of the construction projects. It is impossible to seriously think that some directives, aimed at supervisory personnel, could overcome all obstacles. People decide the success of a cause. And an address to their hearts, concern for their multifarious everyday and spiritual needs, creation of their maximum favorable conditions for productive labor--these

constitute the obligation and the duty of Party organizations and all management supervisors.

In one of its resolutions the obkom bureau pointed out to the Kanashskiy CPSU gorkom that it "frequently discusses construction matters, states the same shortcomings over and over again, but the state of affairs is slow to improve." It seems to us that in this definition there is quite a bit which can also pertain to the obkom itself. As indicated above, many resolutions have been adopted, and quite a few speeches have also been delivered, but with regard to implementing plans for the sector matters do not stand so well. In this republic we often have to listen about the scale and scope of construction operations. But this very circumstance itself presupposes scope and scale in the Party management of this sector.

2384

CSO: 1821

METALWORKING EQUIPMENT

BELORUSSIA'S MACHINE TOOL, INSTRUMENT INDUSTRY VIEWED

Raising Quality, Competitiveness

Minsk, SOVETSKAYA BELORUSSIYA in Russian 4 Apr 80 p 1

[Text] A resolution adopted by the Central Committee of the Communist Party of Belorussia notes that the party organizations and the employees of the machine tool construction enterprises in Belorussia, carrying out the decisions of the 25th Party Congress and subsequent Plenary Sessions of the CPSU Central Committee, have achieved significant advances in raising the technical level and quality of the equipment produced by improving production engineering, technology, and organization. Since the start of the Five Year Plan more than 120 new machine tool models have been put into production. The State Seal of Quality has been awarded to 115 types of equipment being produced, and about fifty percent of the entire machine tool output is classified in the highest quality category; in some plants this figure reaches eighty percent. The output of precision equipment, programmed numerically controlled machine tools, and complete automatic production lines is being expanded.

Responding with specific actions to the CPSU Central Committee and USSR Council of Ministers decree: "On significant improvement of the technical level and competitiveness of metalworking, casting, and woodworking equipment and tooling," the employees of the Minsk Production Associations for Construction of Automatic Production Lines imeni 60th Anniversary of the October Revolution and for Construction of Broaching and Cutting Machines imeni S.M. Kirov, the Machine Tool Construction Association imeni October Revolution, and the Vitebsk Machine Tool Construction Plant imeni Komintern have initiated a program of socialist competition for significant increase of the technical level and competitiveness of the equipment produced on the basis of creative cooperation with the academic and industrial scientific-research institutes, the planning-design organizations, and the associate-enterprises.

The employees of the Minsk Production Association for the Construction of Automatic Production Lines imeni 60th Anniversary of the October Revolution together with the Institute of Engineering Cybernetics and the Institute of

Reliability Problems and Service Life of Machines of the BSSR Academy of Sciences and other scientific and design organizations are carrying out studies to automate design and technological preparation for production and studies of mathematical modeling and prediction of the reliability and service life of the equipment being produced. In accordance with agreements concluded by the Minsk Association, the Leningrad Electromechanical Plant (LEMZ) Production Association is taking measures to improve the programmed numerical control systems used in the machine tools, expand their functional capabilities, and improve their reliability. The Poltava Ukrelektromotor [Ukraine Electric Motor] Association is undertaking the production of new electric motors, and the Bobruysk Belarus' resinotekhnika [Belorussian Rubber Technology] Association is improving the service life of the articles supplied to the Minsk Association. Similar agreements relating to delivery by the Minsk Association of automatic production lines have been made with many other associate-enterprises of several Union Ministries. This will make it possible for the Minsk Association to shorten the time required for the design and introduction into production of new machinery, successfully carry out the development and production of numerically controlled multi-function machine tools and semiautomatic lathes, complete automatic production lines equipped with manipulators, active monitoring instruments, and transfer-storage and diagnostic equipment. By 1986 the productivity of the equipment constructed by the Minsk Association will increase by a factor of 1.15-1.5 and the entire output subject to certification will be delivered with the State Seal of Quality.

The machine tool builders of the Minsk Association for the Construction of Broaching and Cutting Machines imeni S.M. Kirov with the participation of the Experimental Scientific-Research Institute of Metal Cutting Tools (ENIMS), the All-Union Institute of Welding Production, the Leningrad Design and Technological Institute of Casting Production, the Belorussian Republic Scientific-Production Association for Powder Metallurgy, and several institutes of the BSSR Academy of Sciences are carrying out comprehensive studies and efforts directed toward significant improvement of machine tool operational characteristics, quality, and reliability. The Minsk Association plans to produce during the Eleventh Five Year Plan a new series of machine tools with improved productivity; specifically, broaching machines with higher output by a factor of 1.5-2 and cutting machines with higher output by a factor of 2-5. The Association plans to ensure more comprehensive outfitting of the products, raise the percentage of automatic machine tools in the overall spectrum of production equipment to 70 percent, produce machine tools subject to certification which will all be in the highest quality category. The following associate-enterprises are taking an active part in achieving these goals on a contractual basis: the Gomel and Kaunass Tsentrolit [Central Casting] Plants, the Kramatorsk Heavy Machinery Construction Plant, and others, which have undertaken to improve the quality of their semifinished products and component parts.

The workers and specialists of the Minsk Machine Tool Construction Production Association imeni October Revolution, expanding and strengthening their creative cooperation with the employees of ENIS, VNIirelektroonika [All-Union Scientific-Research Institute for Relay Construction], TsMITU [Central Scientific-Research Institute of Packing Materials and Packaging], the institutes of the BSSR Academy of Sciences, the enterprises which are suppliers of components: the LEMZ Association, the Cheboksary Electric Apparatus Plant, the Prokop'yevsk and Kharkov Elektromashina Plants, have pledged to develop and fabricate two years ahead of the established schedule an experimental model of a profile-grinding machine with precision improved by a factor of 1.2-1.6, modernize and expand the dimensional range of the heavy numerically-controlled multi-operation plano-milling and broaching machine tools and increase their productivity by a factor of 1.5-1.6, develop a series of machine tools with magazines for automatic tool replacement, controlled by a single computer, undertake the production of new types of semiautomatic balancing machines, develop and fabricate several experimental models of automatic balancing machines and automatic balancing lines.

The employees of the Vitebsk Machine Construction Plant imeni Komintern with the participation of the scientists of the Institute of Problems of Reliability and Service Life of Machines of the BSSR Academy of Sciences, the specialists of the Minsk Branch of Orgstankinprom [State Planning, Technological, and Experimental Institute for Organization of the Machine Tool and Tool Industry], the Vitebsk SKB (Special Design Bureau) for Tooth Machining, Grinding, and Tool Grinding Machines is developing a system for automated design of detail parts and assembly electrical circuits of the equipment being produced, will introduce welded structures in place of castings, and will take measures to improve production technology and organization. In accordance with the plant agreements regarding competition with the associate-enterprises, the Elets Gidropriwod [Hydraulic Drive] Plant, the M'yanyovsk Gidroapparaty [Hydraulic Apparatus] Plant, and the Donetsk Elektromagnit Association are raising the technical level and quality of the pumps, hydraulic distributors, and magnetic starters delivered to the Minsk plant. As a result the reliability and service life of the machine tools are being increased by a factor of 1.4 and the metal content of the tooth rolling machines is being reduced by 25 percent. The construction of an experimental model of a semiautomatic tooth milling machine with numerically programmed control and its introduction into production will be completed ahead of schedule.

The Central Committee of the Communist Party of Belorussia has approved the initiative proposal of the employees of the Minsk Production Associations for Construction of Automatic Production Lines imeni 60th Anniversary of the October Revolution and for Production of Broaching and Cutting Machines imeni S.M. Kirov, the Machine Tool Construction Association imeni October Revolution, and the Vitebsk Machine Tool Construction Plant imeni Komintern regarding expansion of the socialist competition for significant increase of the technical level and competitiveness of the equipment produced on the basis of creative cooperation with the scientific institutes, the planning and design organizations, and the associate-enterprises.

It is recommended that the obkoms, gorkoms, and gorraykoms of the Communist Party of Belorussia, the Party Committees and the Party Bureaus of the associations and enterprises of the machine and machine-tool construction industry make every possible effort to support and expand this initiative. The creative activity and efforts of the employees of the machine tool construction associations and enterprises, the scientific-research and design organizations, and also the employees of the Belorussian enterprises which are producing components for the machine construction industry should be directed toward further development of this effective form of competition. They should be given effective assistance in carrying out their socialist pledges and the planned measures associated with development of the machine tool construction industry.

It is recommended that the editorial boards of the Belorussian newspapers, radio, and television provide extensive coverage of the efforts of the Party Committees and the production teams of the machine-tool construction enterprises associated with expanding the socialist competition for acceleration of technical progress in the industry and the expansion of cooperation in this effort with the scientific institutes, the planning and design organizations, and the associate-enterprises.

Progress Envisaged

Мінск. СОВЕТСКАЯ БЕЛОРУССИЯ In Russian 15 Apr 80 p 2

[Article by I. Poletilo, director general of the Minsk Machine Tool Production Association (near October Revolution)]

[Text:] The resolution of the CPSU Central Committee and the USSR Council of Ministers "On significant improvement of the technical level and competitiveness of metalworking, casting, and woodworking equipment and tooling" has posed serious problems for the machine tool constructors. The workers and specialists of our Production Association have studied this resolution in detail and have accepted it as a guide for action.

This long-term program for the development of the industry has become the starting point for the development of specific measures by the enterprise related with improving the equipment being produced. Starting from the basic guidelines of the resolution, we have determined the primary directions of our effort and have outlined those goals which should be reached by 1985.

With account for the technical level of production achieved during the Tenth Five Year Plan and the existing production capabilities and organization, new problems are now facing our association. The efforts of our personnel are directed toward creating progressive forms of metal cutting machines and balancing equipment, the production of which has not yet been realized in the USSR. For this it will be necessary to improve production organization and technology, create the material and technical base required to ensure improvement of the technical level and competitiveness of the machines, and resolve many social and personnel problems.

Recently the group of machine tool construction enterprises of Belorussia, including the employees of our association, initiated a competition to improve the technical level and competitiveness of our products. This initiative, approved by the Central Committee of the Communist Party of Belorussia, imposes on us a particular responsibility. We are directing our efforts toward further strengthening and development of creative cooperation with the academic and industrial scientific-research institutes, the planning and design organizations, and the associate-enterprises. Thanks to this approach we have developed a spectrum of new (not produced previously in the USSR) numerically controlled planar mill and boring machines. They are intended for integrated performance of milling, drilling, broaching, and threading operations without transferring the article being machined from one machine to another. Series production of these machines has been achieved a year ahead of schedule. They are equipped with various programmed control systems and tool magazines with automatic tool replacement during machining of the part. The new equipment makes it possible to increase productivity in multi-function machining of articles by a factor of 1.5-8. All the machines of this category, including those of the "machining center" type, have been awarded the State Seal of Quality.

In the balancing equipment field we have developed for the first time in the USSR semiautomatic machines and put them into series production. In cooperation with the Leningrad Special Design Bureau for Heavy and Unique Machines we have developed and put into operation at the Leningrad Electrotechnical Association "Elektrosil" two unique milling-turning machining centers, used to machine the stator ribs of a 1.6-million-kW turbogenerator.

These machines improve labor productivity by a factor of six. A similar unique machine but with still greater degree of automation has been constructed which improves labor productivity by a factor of 25 while freeing a large amount of metal cutting equipment and production floor area.

During the Tenth Five Year Plan practically the entire output of the Minsk association has been updated. For example, this year new machine tools account for 90 percent of the overall volume of production. The machine tools being produced today have low specific metal consumption, high precision, good reliability, and long service life in comparison with those produced previously. Much is being done in our organization to improve work conditions and raise labor productivity. We have introduced new technological processes and mechanized the operations in metallurgical production. For example, we are using forced cooling (with the aid of pumps) in the production of foundation castings, we have introduced the production of steel castings using the lost wax process and have changed over to liquid self-hardening mixtures in the fabrication of casting cores and forms, we have introduced nitriding and case hardening in a natural gas medium, and other measures. These steps have made it possible to improve product quality and working conditions.

Mechanization and automation of detail part machining and intra-plant handling and transfer operations are proceeding on a broad front. Specialized shop areas for machining and assembly have been created, which required shifting practically all the metal cutting machines of the machining and assembly shop. The level of mechanization of the handling and transfer operations has been raised to 88 percent. We have put into operation a data and computing center, and the first stage of an automated production control system using electronic computers is functioning. As a result we have achieved an output of nearly 12,000 rubles per worker.

It is clear that these achievements have been made possible only by the creative and diligent efforts of our shop workers and engineers, and the skillful efforts of the Party Organization of the Minsk Association directed toward mobilization of the entire plant to fulfill the plans and meet the socialist objectives. The personnel of the Association have given broad support to the challenging slogans: "Precise rhythm, high work rates, excellent quality," "Let's all advance together," "State Seal of Quality for each new product," and others. The competition devoted to the 110th anniversary of Lenin's birth has developed keen rivalry. All the production of the various shops and divisions are now participating in this competition. More than 1850 individuals have enlisted in the "communist approach to work," movement and 1555 have been awarded the title: "Shock Worker of Communist Labor." Nearly 300 of the outstanding workers of the lead plant have already met their personal Five-Year-Plan goals. These include the plant veteran A.I. Dovgalo, machinist in the mechanical assembly shop; A.M. Terekhov, planing machine operator in machine shop No 2; A.A. Khrolenok, electrical assembler in the small component shop and leader of the outstanding Komsomol youth brigade; A.V. Glukhovskii, drill press operator in the machine shop; and others. All the employees are trying to match the leaders and the techniques used by the latter are being studied and introduced throughout the plant. This is helping the employees to achieve new goals and solve successfully the problems facing us in light of the resolution of the CPSU Central Committee and the USSR Council of Ministers.

Speaking frankly, the plano-milling and broaching machines and the plano-milling machines being produced by the Minsk Association still do not satisfy us, since they do not meet all the requirements of the various machine construction branches of the industry. We need to broaden the dimensional series and modifications with regard to machining lengths and machine tool configuration, mechanize and automate all the processes involving control of the equipment and the auxiliary operations, use computers having practically unlimited capabilities with regard to storing information and instructions relating to automatic machining of parts differing in configuration and shape. Our association is facing the problem of broadening the dimensional series of the milling and boring machines with respect to table width by a factor of 2.5 to 3. We need to develop new components and devices which will make it possible to machine body and foundation parts from five sides without manipulating the parts, develop a complete system

of attachments and devices broadening the technological capabilities, and improve the productivity of the machines. During the coming Five Year Plan we must turn to the development of integrated complexes intended for complete machining of parts with computer control.

In the plans for broadening the range of machines, inter-plant and inter-republic standardization, and cooperation the problem arises of working out joint production of equipment in cooperation with the Ul'yanov Heavy and Unique Machine Tool Plant, the Gorky Machine Construction Production Association, the Novosibirsk Tyazhtankogidropress (Heavy Machine Tool and Hydraulic Press) Association, and others. For this it is necessary to develop standardized designs of the basic components, including the first (in the USSR) milling and boring head of 75 kW capacity and a hydrostatic rack-and-worm transmission.

In the balancing equipment field we must change over from the production of second-generation machines to the third- and fourth-generation machines and systems--semiautomatic machines and automatic lines for integrated performance of all the operations. By 1985 we need to develop new models of this equipment and organize their production in the Mar'inogorsk Balancing Machine Plant now under construction.

For the solution of these complex problems we must raise to a new level the design and experimental capabilities of the association; for example, we need to develop a special design bureau for plano-machining and balancing machines.

Introduction into production of new types of high-precision and very large machines requires re-examination of the technological processes and technical re-equipping of the lines in the lead plant. More profound specialization in the framework of the Minsk Association plants is required.

We are thinking about how to centralize pre-production operations; organize specialized production areas for gears, spindles, bodies, and other parts; centralize the production of special-purpose tooling and fixtures. In other words, how to create large-series, highly mechanized output of parts and components of the same type, where advanced technology and the higher forms of production organization can be utilized.

Thus, in the 1981-1984 period we plan to expand the lead plant in Minsk--construct a building with temperature-controlled facility for producing milling and grinding machines of high and very high accuracy, and also centralized production of hydrostatic rack-and-worm transmissions. We need to construct an engineering building with an experimental facility for the design department of the Association and complete the erection of the tooling production shop complex.

We see that the problems are complex and will require tremendous efforts, both by ourselves in the machine tool construction industry and by our associate supplies, and by the scientists and designers. A very important step has already been taken in this direction--agreements have been

concluded for socialist competition and cooperation between our Association and several associate enterprises, and also with the leading scientific and research institutes and educational institutions of the country.

They say that a good beginning is half the battle. Our machine tool construction organization will do all in its power to perform with honor the important task set by the Party and the State.

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SPECIALIZATION, CONCENTRATION OF FORGE PRESS PRODUCTION

Изв. ЭКОНОМИКА СОВЕТСКОЙ УКРАИНЫ in Russian No 3, 1980 pp 59-64

[Article by L. Krayev, sector chief of the "VPKTIStroyformash" [All-Union Planning-and-Design and Technological Institute of Road Machinery] scientific production association: "Questions of Specialization and Concentration of Forge Press Production"]

[Text] In many ways, the dynamics of machine building is determined by the level of development of casting and forging plants, the role and significance of which are increasing. A characteristic feature of the modern-day stage in development of machine building is the shifting of the basic processes in part forming from the machining phase to the casting and forging: the blanks are cast to approximate the final part in shape, size and weight, thereby reducing the amount of subsequent machining. This is associated to a certain extent with supplementary costs in casting, forging and welding plants, but, in the final analysis, it results in a decrease in costs to the national economy when manufacturing machinery and equipment.

Among machine building's casting and forging plants, the forging plant, which accounts for 17 percent of the total volume of blanks and almost 35 percent of machine building's fixed productive capital procurement base. In the manufacture of forgings, 9.2 percent of all rolled metal produced in the country is processed. One thousand five hundred shops and sectors, employing 12.5 percent of all workers engaged in casting and forging production, manufacture forgings. This determines the role of forge press production to be one of the basic manufacturing redivisions of the procurement base for machine building.

A task has been posed for the country's machine-building industry during the Tenth Five-Year Plan--to increase output of machinery and equipment by a factor of 1.5-1.6. In turn, this will promote the growth of forging production. According to our calculations, the output increased by more than a factor of 1.8, including growth by a factor of 2.4 for stamped forgings. The level of development which has been attained and the tasks

confronting the procurement base for machine building require not only an increase in the mass of forging production, but an increase in the technological and economic and the organizational levels as well. A further improvement in their technological structure and the organization of production, insuring reductions in metal consumption, labor intensity, the capital-output ratio and capital intensiveness per unit of output is one of the important trends in improving the qualitative level of forging production, as is the increase in the growth of work productivity. All of this should be resolved in the set of plans for development of forge press production of the individual enterprise, the republic and the country as a whole in connection with the plan for scientific and technical progress at the various levels of sector and regional management.

Scientific and technical progress directly effect the social division of labor, forms of which are specialization, concentration and cooperation, both within the framework of the individual enterprises and among the sectors.

The technical and economic indicators characterize the level of concentration and specialization of forge press production.

For example, results of calculations attest that approximately 3,000 ton/year of forgings are produced annually in 80 percent of the forge-and-press and 78.5 percent of the forge-and-stamping shops. They account for 27.5 percent of the output of forged and 10.7 percent of the stamped forgings, occupying 44.9 and 23.1 percent of the workers in forge press production in the Ukrainian SSR. In these subdivisions, the production cost of a single ton of forging stock is 8-10 percent higher and the labor productivity is lower by a factor of 2-2.5 than at specialized enterprises or in large shops.

The fact that redivision of casting and forging operations is mostly concentrated at universal combined plants with a closed (production) cycle, where there is no specialization in casting production (foundings, forgings and welded metal structures) for practical purposes, provide the most serious shortcomings in the development of the redivision of casting and forging operations within the machine-building industry. Necessary attention has not been paid for a long time to questions of specialization of forging and pressing production, forge press production in particular. The departmental approach has dominated in planning capital investments in its development, and capital has been spread thin and directed not toward creation of shops and plants specialized in forging production, but in expansion and renovation of other redivisions at universal plants.

Therefore the level of concentration in forge press production within the republic is not high enough; for example, 68 percent of forge-and-stamping shops and sectors produce less than 1,000 tons; 21 percent produce 1,000-5,000 tons; 8 percent, 5,000-20,000 tons and 3 percent, more than 20,000 tons of forgings per year. Moreover, in the shops in the first three groups, hammer forging is the primary production process.

Experience in the operation of small forge-and-stamping shops and sectors indicates that improving the structure of the production processes and introducing progressive technology and highly productive equipment is inexpedient and economically unprofitable. The work load for equipment in these subdivisions does not exceed 20-30 percent, and the diverse list of part castings requires frequent readjustment of the stamping equipment (2-3 times per shift), which, in turn, reduces labor productivity by 20-30 percent. As a rule, inadequate organization of production and unfavorable sanitary and hygiene working conditions are observed here.

Table 1

Structure of Metal Consumption in the Republic's Forging Shops

Indicators	Thousands of tons	Percent
Total metal consumption to produce parts fabricated by OMD [mechanical metal working]	1,648.5	100
Total forging and stamping output	1,302.1	78.9
Overall weight of finished parts after milling	774.6	46.7
Overall volume of metal wastes in parts production	873.9	53.3
including:		
in forge press production	346.4	21.1
Of these:		
furnace losses/slag	114.4	7.0
fins	100.5	6.1
head	105.1	6.4
trimming	26.4	1.6
in mechanical production (shavings)	527.5	32.2

Highly productive technological processes are not common enough as a result of the low level of specialization and concentration of forge press production. Production of forgings using such efficient plastic deformation methods as stamping on crankshaft hot-stamping presses (CHSP) constituted 15.3 percent of the total volume of hot stamping production throughout the republic in 1977, die stamping and finishing to final dimensions--4.7 percent; impact extrusion--0.8 percent and stamping using non-oxidizing heat-up--12.8 percent.

The low relative importance of progressive technological processes at the republic's enterprises has a negative effect on the structure of forge press castings. This structure was characterized in 1977 in the following manner: forge work from ingots--13.2 percent; forge work from rolled metal--25.7 percent and die forging work--61.1 percent. For this reason, the coefficient of metal usage (CMU) and the coefficient of accuracy by weight (CAW) with respect to the forgings are low (0.43 and 0.62), as are those for die

forgings (0.56 and 0.71). In this regard, the structure of metal consumption in the republic's forging shops during part production using a plastic deformation method are not entirely satisfactory either, as the data in Table 1 attests.

As may be seen from the data which are presented, 53.3 percent (about 880,000 tons) of the metal is converted to scrap during machining of the parts, including 32.2 percent (more than 500,000 tons) in the shaving process. A large number of machine tools and machine operators whose labor was inefficiently used were engaged in machining these parts. Calculations which we have made showed that increasing the coefficient of metal usage by 0.01 in the production of forged forgings and to 0.04 when making stamped forgings would save 270,000 tons of metal on the average throughout the republic, and would hypothetically free 27,000 machine tools and about 38,000 workers. The area in which progressive technology and highly productive forge press equipment are utilized will be expanded significantly. In order to achieve this, it is necessary to implement a system of measures intended to strengthen the overall effect of the plan, the economic levers and the stimuli for further development of forge press production; to improve its efficiency and the quality of forgings and to refine the ways for forming plans which are inter-related with consumers based on program objective methods.

For a more complete calculation of all factors influencing the volume and structure of forging output and in determining demand for them, it is preferable to employ economic-mathematical methods based on a classification of forgings by groups of complexity, extent of series production, weight, initial metal, operations and equipment in regard to the article, the enterprise, the economic region, the sector, the republic as a whole and the country, indicating the weight separately based on each characteristic,* as well as a direct accounting method based on data on planned advances in production output and changes in the balance structure of building materials throughout the leading sectors of industry. The rates and the structure for forging production have been set on the basis of balanced methods, and future demand for them has been determined.

Step-by-step solution of problems concerning the organic union of the achievements of scientific and technical progress with the advantages of a socialist management system, a strengthening of the ties of science and production, is the main and decisive factor in increasing forging output and improving the efficiency of forge press production. However, as research has shown, the achievements of modern science and technology are realized extremely slowly in forge press production. A similar situation is caused by the fact that the production of forge press blanks is dispersed

*"The Synthesis of a Classifying System for Forged and Stamped Forgings," KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, No 8, 1975, pp 20-22.

among almost 80 percent of the republic's industrial enterprises, its capacities are insignificant, the forging products list reaches 1,000 and more names, etc. All of this retards the employment of total mechanization and the automation of production processes and the reduction of the level of manual labor and labor-intensive and auxiliary operations, the performance of which is carried out in specialized shops using forging manipulators and robots built into the mechanized or automated flow lines.

In connection with this, it is necessary to solve the following problem in the not-too-distant future: provision for re-outfitting of existing shops and sectors; extending specialization and concentration of forge press production according to the plan and creation and development of specialized plants and shops satisfying the demands of the machine-building sectors for forgings in a centralized manner. Implementation of these measures presupposes the broad incorporation of progressive equipment and advanced technology, the gradual cessation of forging production in unprofitable small shops and sectors, concentration of the production of parts of the same kind at specialized plants, efficient exploitation of production capabilities given a well-founded distribution and redistribution of the castings product list among enterprises and the broad application of progressive methods for producing precise forgings.

Expanding the area in which the progressive production processes of OMD are employed is possible in specialized forging shops and at plants, given the condition that the castings product list be redistributed among them. Redistribution of the castings produce list among the shops and plants in the machine-building sector will result in its delimitation by virtue of the concentration of forgings or stampings of the same kind within the confines of individual plants which are supplying the machine-building enterprises of the various sectors which are located in the same or in adjacent industrial centers. This will permit specialization of forge press production to be differentiated according to engineering process methods, weight, geometric dimensions, forging configurations, types of forging blanks, types of metal used, etc, i.e. for custom, small-series and series production to be specialized, for a group forging production method to be organized, and, on this basis, for achievement of the greatest economic savings to be insured and for progressive plastic deformation manufacturing processes and automatic and semiautomatic forging and stamping lines with integrated equipment to be incorporated.

We are faced with a particularly large amount to do in the area of further development of large forging production in view of the necessity for increasing the unit capacity of machines being produced, high metal consumption and a sharp increase in the coefficient of metal usage during the process of manufacturing them. Heavy, power and chemical machine building, ship building, etc. are consumers of large forgings.

The further development and refinement of the technology of large forging production using hammer forging methods is entirely natural. Modernization of existing equipment, equipping it with mechanization and automation facilities is the primary way of increasing the technical level in forging production using the hammer forging method. For example, forging presses must be equipped with automatic control for non-contact measurement of the forgings, which will make it possible to control their dimensions and thereby to decrease allowances up to 30 percent and tolerances by a factor of 3-5 and to reduce the total weight of a forging by up to 8 percent. Incorporation of precision blank cutting with proportioning by weight can provide a significant savings. Pre-rolling, which accelerates the preparator process by a factor of 1.5-1.7 and provides a 10-15 percent savings in metal, should find broad application in preliminary operations for forming forgings with a drawn-in axis.

Much attention is being devoted in forge press production to refinement of the processes for heating the blanks, however, even now about 13 percent of the metal is scrapped (as slag, fins and furnace losses). The procedure for heating them depends on the method of forming the forging (forging from ingots, forging from rolled stock, swaging), hence the power carrier, furnace design, heating procedures etc. are selected from this.

The following progressive heating methods should be the primary processes in modern machine-building heat technology: non-oxidizing, high-speed, in the fluidized bed, in lithium vapors, induction, contact electric heating, etc, the use of which will insure an increase in the KMU.

An analysis of the processes for mechanical metal working (OMD) which are employed in forge press production permitted us to determine the progressiveness of each of them and their merits from the point of view of their economic effect. The following may be assigned to the most progressive OMD methods: converting hammer forging to drop forging; fin and finless drop forging on crankshaft hot-stamping presses (a 6-10 percent savings in metal being achieved and labor productivity being increased by 20 percent; in the future, this form of OMD will reach 30-33 percent of the total volume of hot-stamping production); impact extrusion (in unitized and separable dies) insuring production of accurate forgings; stamping gears with teeth (here the savings is up to 30-60 percent); hot die forging on multi-position automated equipment as compared with forging on horizontal forging machines (HFM) (a 5-10 percent increase in metal savings is achieved and labor productivity improves by a factor of 4-6) and highspeed drop forging (this permits up to a 60 percent savings in metal and reduces the production cost of forgings by 50-60 percent). It is impossible not to tell about forging on HFM with horizontal and vertical separation of the dies, making it possible to produce a comprehensive list of parts. Stamping on multi-stage shaft type rotary forging machines (RFM) eliminates machining almost completely. Cross-helical rolling is finding broad dissemination in forge press production. Furthermore, the development of non-traditional mechanical metal working methods which will comprise 0.3-1.0 percent of the total volume

of forge press blank production and the structure of manufacturing processes is proposed for the future. The wide use of progressive manufacturing processes for shaping parts with high physico-chemical properties will increase the relative importance of swaging in the total output production of forgings to 80 percent, and this will provide a savings of about 490,000 tons of rolled metal within the republic.

The broad use of the above-mentioned manufacturing processes for mechanical metal working requires that specialization and concentration of forge press production be implemented at an accelerated pace in all sectors of machine building by creating cluster bases and shops at existing enterprises with the organization of sectors within them with a restricted product list and weight for satisfaction not only of their requirements, but the requests of adjacent industries located within a given region, as well as construction of new central forging shop type facilities.

The organization of specialized forge press plants will permit us to raise the level mechanization and automation of the production processes, which is not high enough at certain plants at the present time, as the data from Table 2 will attest. The data from the table attest to the fact that the following plants, where the volume of forge press blanks is close to optimal, have the highest level of mechanization and automation: the Kiev Automatic Lathe Plant, the Dnepropetrovskiy Press Plant and the Kramatorskiy Heavy Lathe Plant. Thus the level of production concentration directly affects the mechanization and automation of production processes. Presently there are about 200 automated flow lines in forge press shops for series and mass production within the republic. Their number will grow in the near future. Labor-intensive and auxiliary operations, feeding rolled stock for cutting, loading and unloading the blanks during heating, transporting the heated blanks from the furnace to the forging equipment and subsequent feeding during the course of the manufacturing process, control of dimensions, stock-piling the forgings at storage sites using automated stackers and loading them onto rail or wheel-type transport for delivery to their destination are the main targets of automation.

Refinement of the technology, raising the level of mechanization and automation depends on acceleration of the rates of scientific and technical progress in forge press machine building. This progress is developing in the following directions: creation of new forge press machinery (FPM) such as installations with integrated equipment, sectional installations, assembled integrated installations, etc; design improvement and modernization of existing FPM, precision blank cutting presses, drop forging presses, high-speed hammers, mechanical and hydraulic presses with forces of 630-40,000 tf, high-speed counterflow hammers with impact energy of 2,500-6,300 kg/m, horizontal forging machines with horizontal and vertical separation of dies, radial forging machines with automatic heat-up and automatic feed of the blanks into the part-shaping zone in particular, as well as automated complexes, e.g. a press-manipulator with an automatic control system, etc. The use of such machinery will provide for a 30-40 percent savings in metal and raise labor productivity by 50-60 percent. Scientific

Table 2 The Level of Mechanization and Automation of Forge Press Production at Machine-Tool Building Plants on 1 January 1978

Enterprises	Extent Workers involved in mechanized labor	Level of mechanized labor in % of its total input	Level production processes mechanized
Kramatorsky heavy machine-building plant	80	73	72
Glukhovskiy standard-unit machine tool plant	55	85	68
Khar'kovskiy standard-unit machine tool plant	60	35	43
Berdichevskiy machine-tool building plant "Komsomolets"	77	30	39
Kievskiy automatic lathe plant imeni Gor'kiy	97	58	77
Khar'kovskiy machine-tool building plant imeni Kisior	80	50	65
Knepropetrovskiy press plant	84	70	57
Stryyskiy forge press equipment plant imeni S. M. Kirov	88	47	38

and technical progress in forge press machine building insures improvement in quality, an increase in machinery reliability; the outfitting of forge press machinery with mechanization and automation equipment; inspection and control; the unification, standardization and integration of machinery; and the increase in the output of forge press machinery with numerical program control (NPC).

In the future, the growth in production of machine building's product will, according to the author's estimates, require increasing output of forge press machinery by a factor of 2-2.5. These estimates are based on long-term volumes of rolled metal production in the country and are coordinated with the dependency existing between rolled metal output and the growth of the FPM inventory. Rolled metal production in the country for the years 1962, 1965, 1970 and 1975 and the forge press machinery inventory according to the inventories for 1 April 1962, 1972 and 1975 were taken as the base when assessing FPM production. During this period, FPM growth rates outstripped the rates of rolled metal production, however, they lag behind the rates in the development of machine building.

The planned volumes for production of forging blanks, particularly drop forged, and the incorporation of progressive technology and advanced forms of production organization are moving the refinement in the structure and the increasing of progressive forge press equipment output into the forefront.

Designers and manufacturing engineers are faced with creating new types of dies, accessories and attachments and expanding the gamut of standard non-standardized equipment (forge manipulators, conveyor lines, etc). This will promote an expansion of the area in which progressive technology and equipment are utilized with a high level of mechanization and automation of the basic and auxiliary processes. If it further planned to raise the efficiency of forge press production operations by improving the quality of the forgings, more complete utilization of metal and reduction of labor-intensiveness.

Capital investments in the development of specialized production of blanks should grow significantly. The estimates and substantiations which have been presented show the advisability of creating new specialized plants and base shops throughout the republic for centralized production of general purpose blanks for machine building such as the centralized forge shop. They can be situated in the places of greatest forging demand, and the clustered bases can be at active plants having an adequate material and equipment base.

Strengthening the processes for concentration and specialization of production make it necessary to refine control of forge press production and to create large, self-supporting production and scientific-production associations for the output of blanks. The solution to this problem, which takes into consideration the existing structure of the intra-industry links in machine building, should be incorporated into schemes for management of the sector and be provided for in the frameworks of the organization of both all-union and regional associations. This will require the organizational restructuring of forge press production and the separation of intraindustrial machine-building plants into an independent sector of the national economy.

It is necessary to create a centralized technical-economic information base and build an automated control system for it on this basis on a scale for the whole national economy with the aim of refining the organization and management of forge press production. For the specialized forging plants and shops represent not only a complex stochastic system, but an extremely dynamic system with a substantial change in the product list and volumes of output produced, the level of equipment and organization of production, the amount of materials and the status of their supply and the status of cadres and their skill. The creation of automated program control will provide all units of the sub-sector with information and permit questions on fulfillment of the plan to be resolved more practically and with an eye to quality, shipments of products under subcontracting arrangements to be more precisely coordinated, planning in sectors of the national economy to be improved and the productivity of labor and the efficiency of social production to be increased.

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